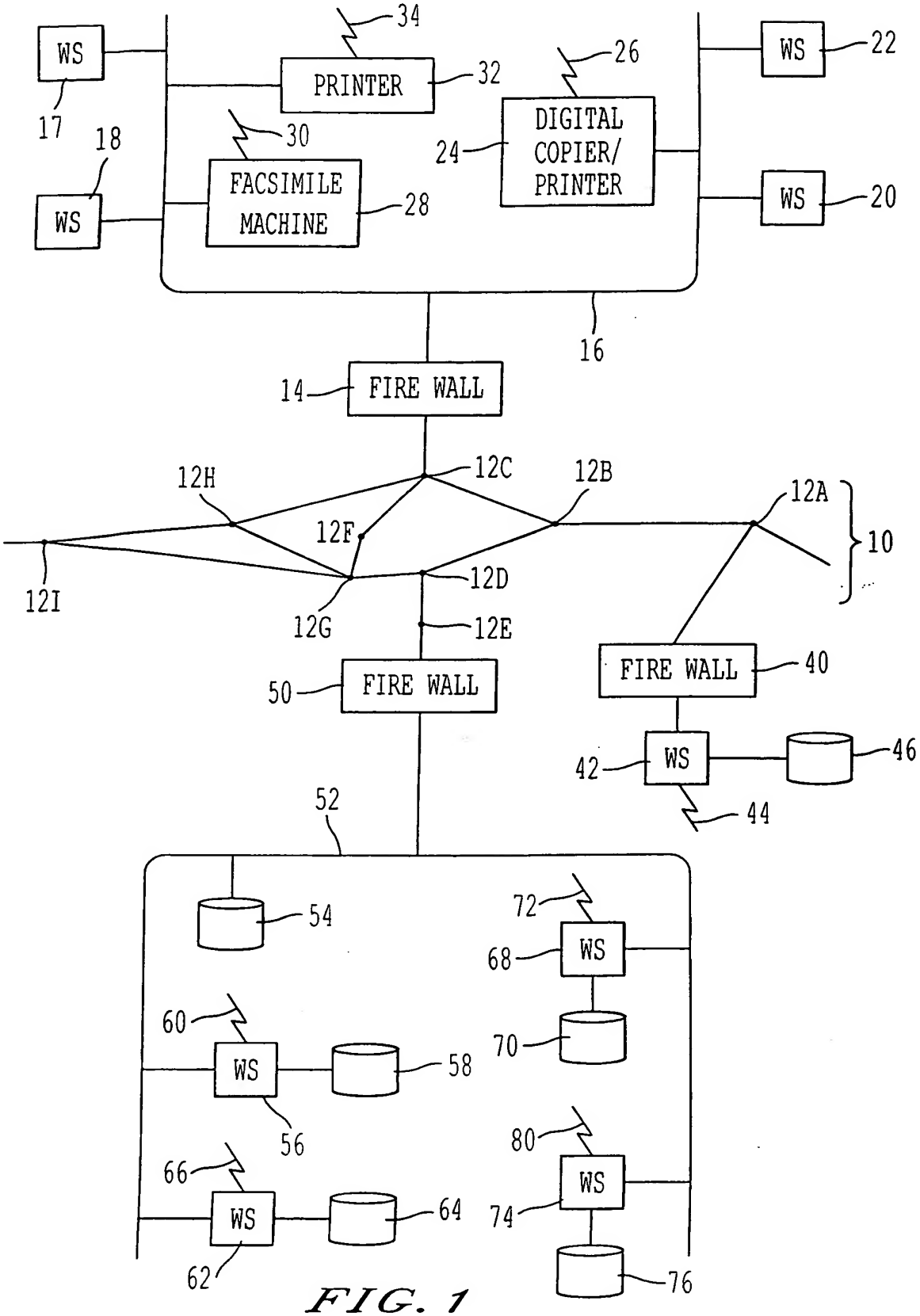

WS
17
18
WS
34
PRINTER
32
30
FACSIMILE MACHINE
28
26
DIGITAL COPIER/ PRINTER
24
WS
22
WS
20
16
14
FIRE WALL
12H
12C
12B
12A
10
12F
12I
12D
12G
12E
50
FIRE WALL
FIRE WALL
40
42
WS
46
44
52
54
72
68
WS
60
WS
58
70
56
66
WS
64
80
WS
74
62
76

FIG. 1

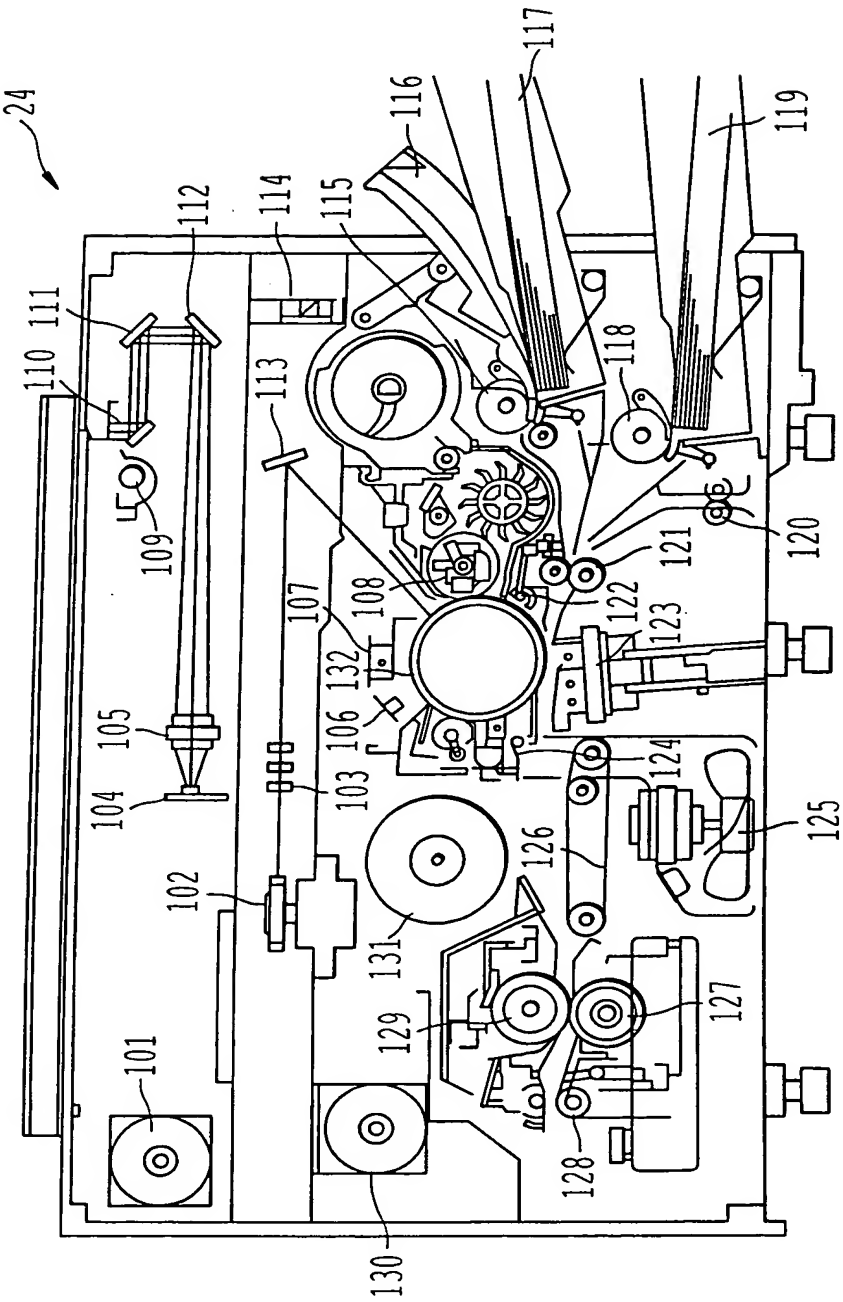

24
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132

FIG. 2

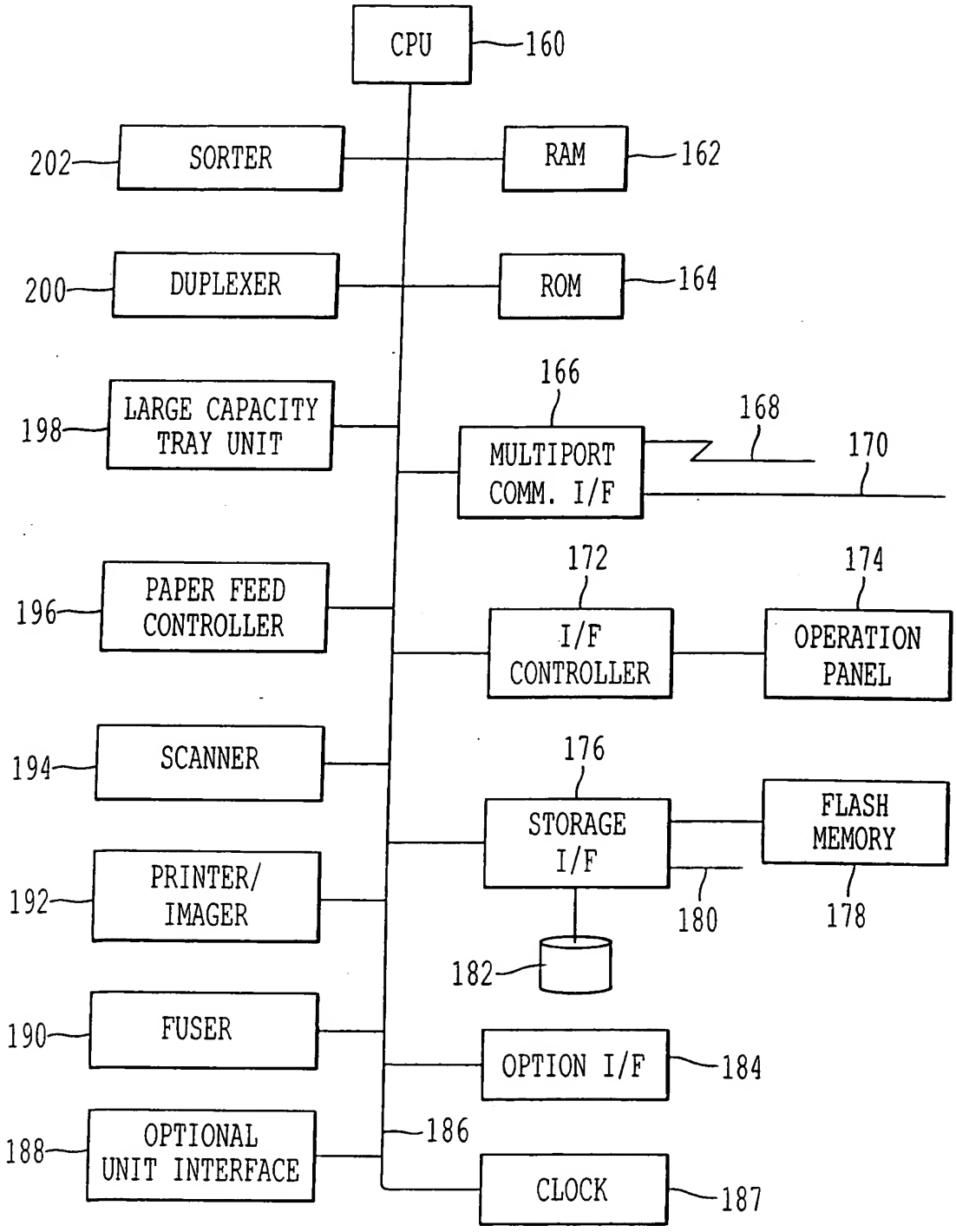

CPU
160
SORTER
202
RAM
162
DUPLEXER
200
ROM
164
166
LARGE CAPACITY TRAY UNIT
198
168
MULTIPORT COMM. I/F
170
172
174
PAPER FEED CONTROLLER
196
I/F CONTROLLER
OPERATION PANEL
SCANNER
194
176
STORAGE I/F
FLASH MEMORY
PRINTER/ IMAGER
192
180
178
182
FUSER
190
OPTION I/F
184
OPTIONAL UNIT INTERFACE
188
186
CLOCK
187

FIG. 3

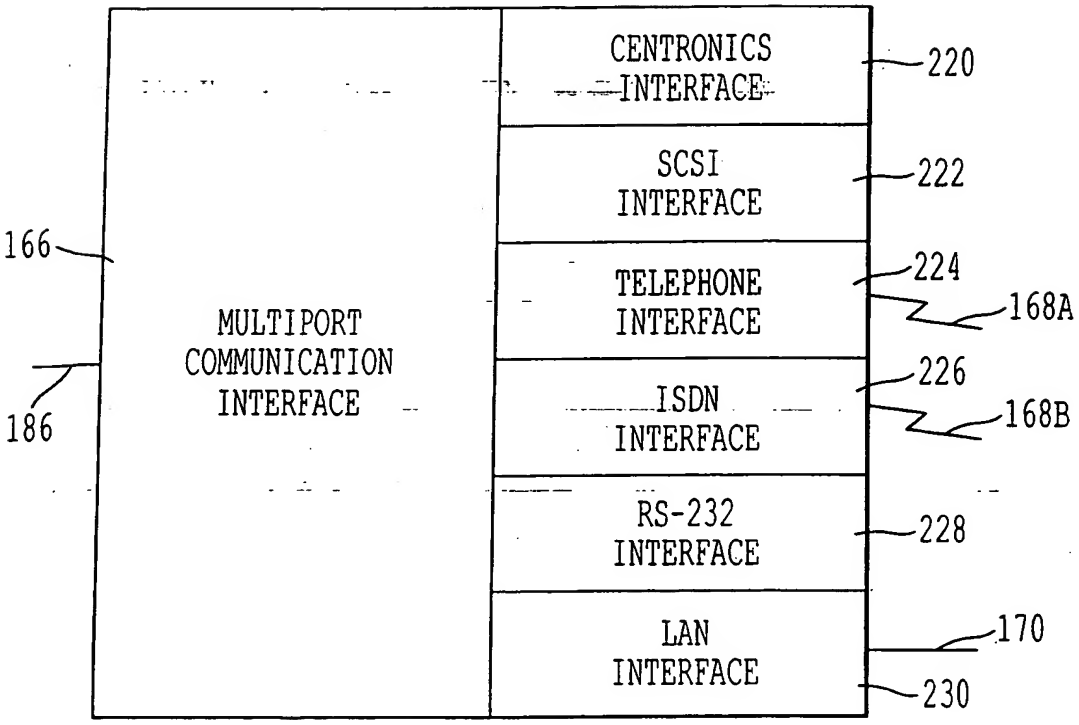

MULTIPORT
COMMUNICATION
INTERFACE
166
186
CENTRONICS
INTERFACE
220
SCSI
INTERFACE
222
TELEPHONE
INTERFACE
224
168A
ISDN
INTERFACE
226
168B
RS-232
INTERFACE
228
LAN
INTERFACE
170
230

FIG. 4

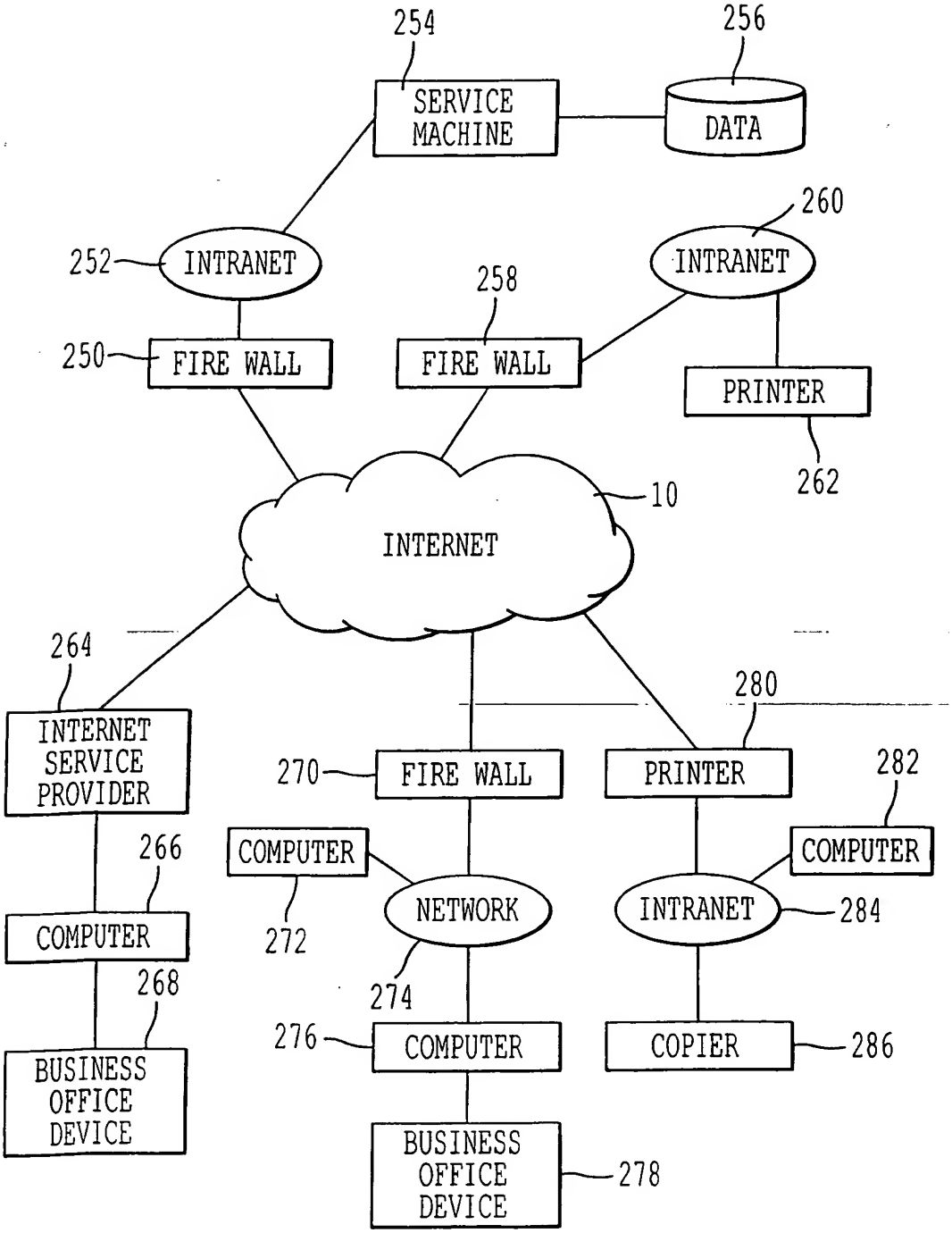

254
SERVICE MACHINE
256
DATA
260
252
INTRANET
INTRANET
258
250
FIRE WALL
FIRE WALL
PRINTER
262
10
INTERNET
264
280
INTERNET SERVICE PROVIDER
270
FIRE WALL
PRINTER
282
COMPUTER
COMPUTER
266
NETWORK
INTRANET
284
272
COMPUTER
268
274
276
COMPUTER
COPIER
286
BUSINESS OFFICE DEVICE
BUSINESS OFFICE DEVICE
278

FIG. 5

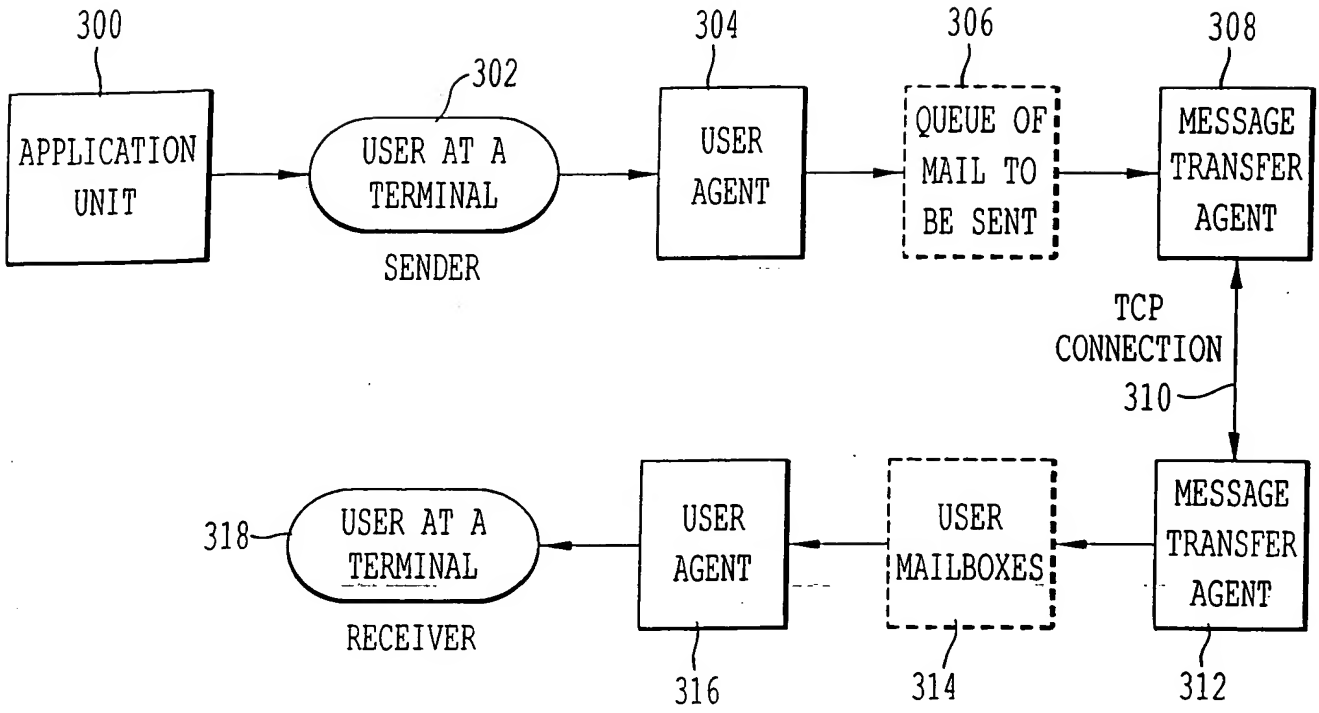

300
APPLICATION UNIT
302
USER AT A TERMINAL
SENDER
304
USER AGENT
306
QUEUE OF MAIL TO BE SENT
308
MESSAGE TRANSFER AGENT
TCP CONNECTION
310
MESSAGE TRANSFER AGENT
312
USER MAILBOXES
314
USER AGENT
316
318
USER AT A TERMINAL
RECEIVER

FIG. 6A

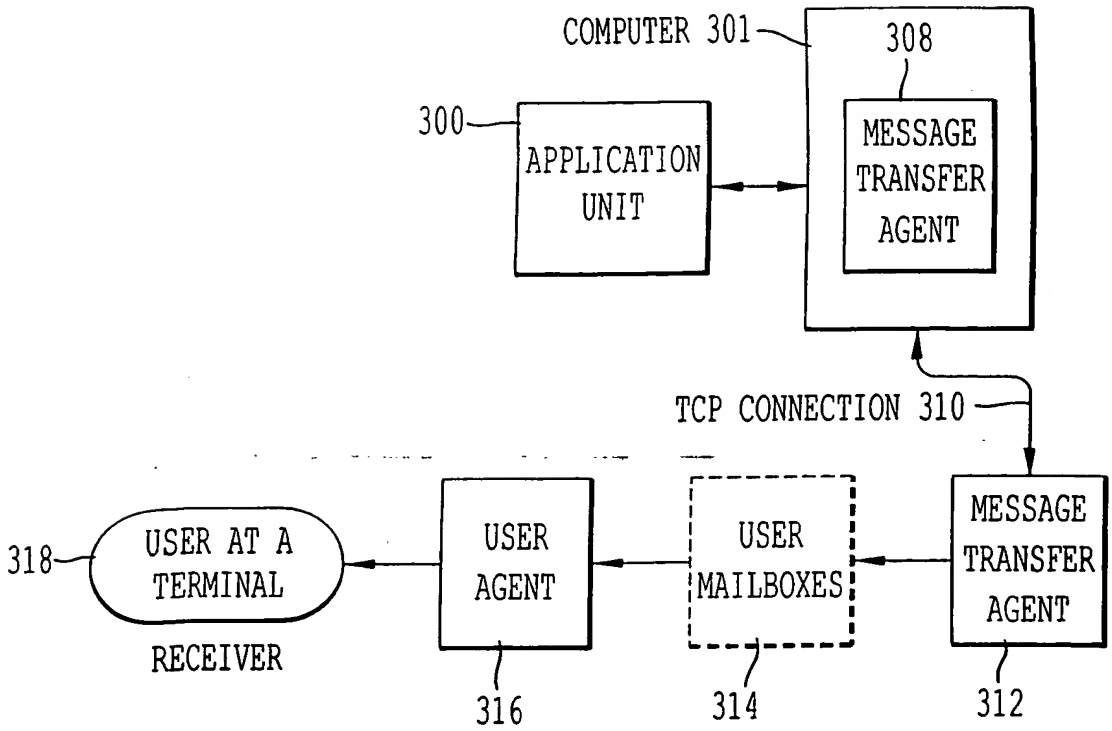

COMPUTER 301
308
300
APPLICATION UNIT
MESSAGE TRANSFER AGENT
TCP CONNECTION 310
318
USER AT A TERMINAL
RECEIVER
USER AGENT
USER MAILBOXES
MESSAGE TRANSFER AGENT
316
314
312

FIG. 6B

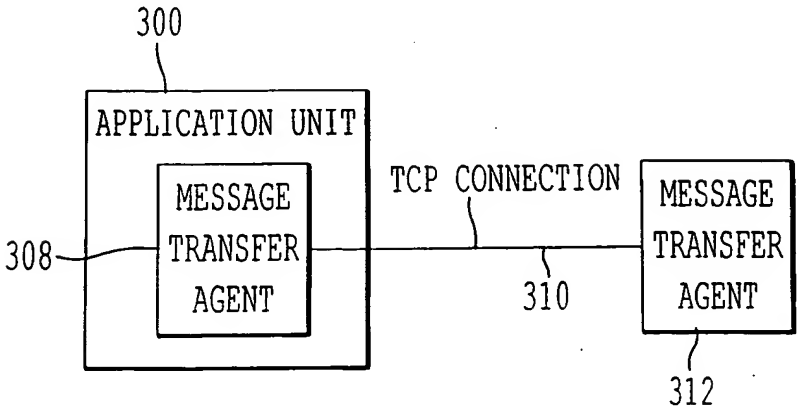

300
APPLICATION UNIT
MESSAGE TRANSFER AGENT
308
TCP CONNECTION
310
MESSAGE TRANSFER AGENT
312

FIG. 6C

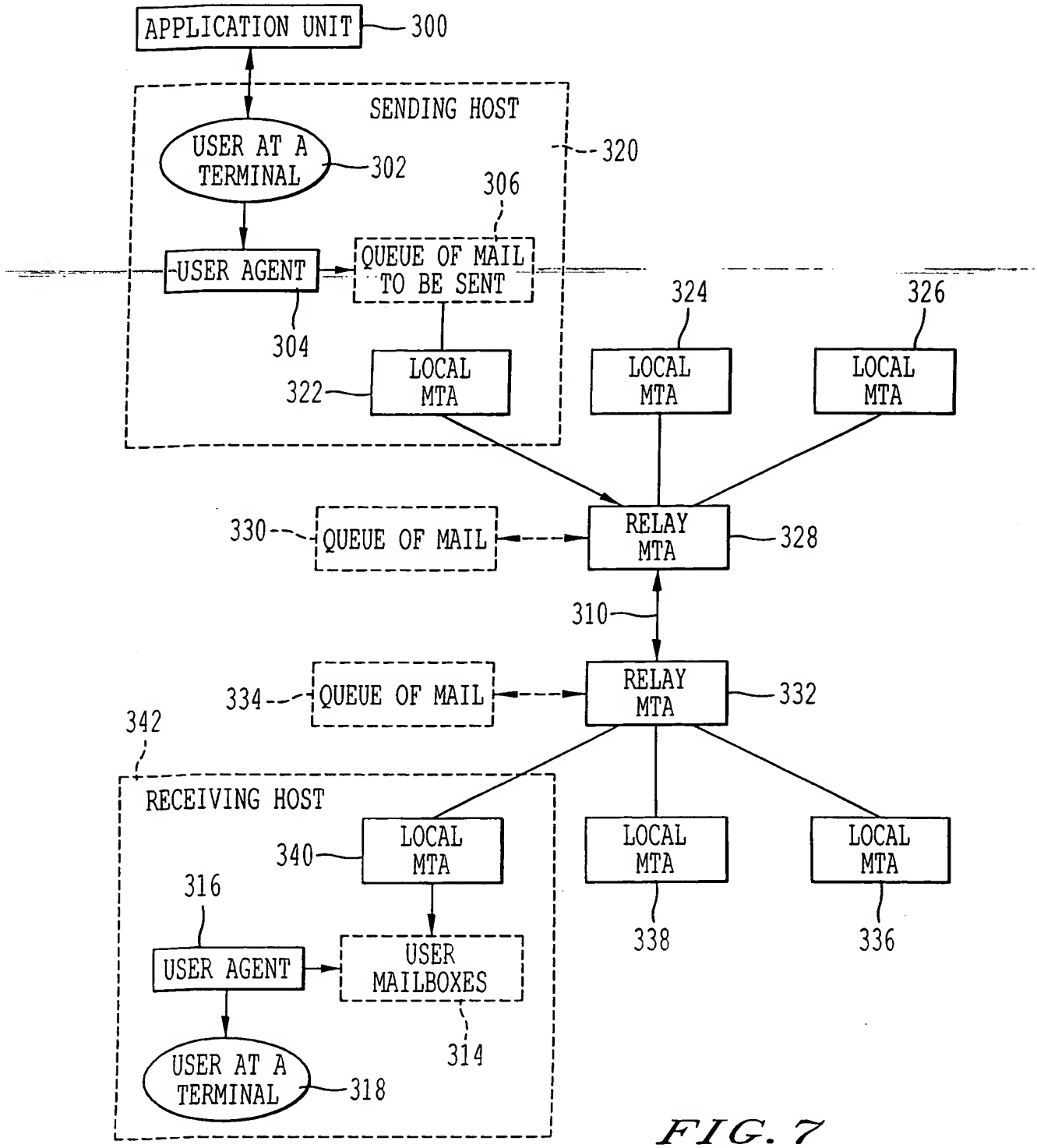

APPLICATION UNIT
300
SENDING HOST
320
USER AT A TERMINAL
302
306
USER AGENT
QUEUE OF MAIL TO BE SENT
304
LOCAL MTA
322
LOCAL MTA
324
LOCAL MTA
326
330
QUEUE OF MAIL
RELAY MTA
328
310
334
QUEUE OF MAIL
RELAY MTA
332
342
RECEIVING HOST
LOCAL MTA
340
LOCAL MTA
338
LOCAL MTA
336
316
USER AGENT
USER MAILBOXES
314
USER AT A TERMINAL
318

FIG. 7

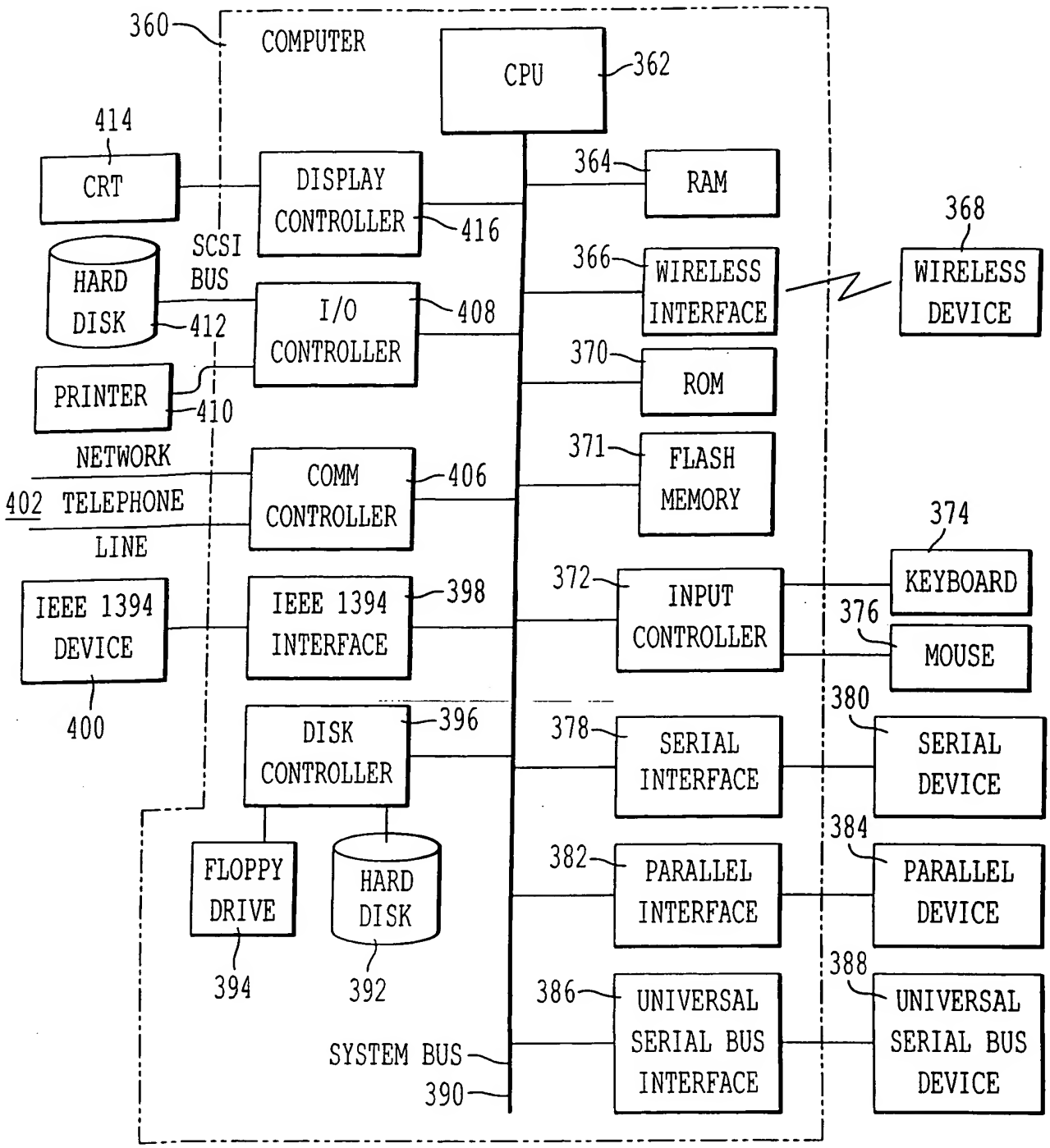

360
COMPUTER
CPU
362
414
CRT
DISPLAY CONTROLLER
364
RAM
416
368
SCSI BUS
HARD DISK
412
I/O CONTROLLER
408
366
WIRELESS INTERFACE
WIRELESS DEVICE
PRINTER
410
370
ROM
NETWORK
402 TELEPHONE LINE
COMM CONTROLLER
406
371
FLASH MEMORY
374
IEEE 1394 DEVICE
400
IEEE 1394 INTERFACE
398
372
INPUT CONTROLLER
KEYBOARD
376
MOUSE
DISK CONTROLLER
396
380
378
SERIAL INTERFACE
SERIAL DEVICE
FLOPPY DRIVE
394
HARD DISK
392
382
PARALLEL INTERFACE
384
PARALLEL DEVICE
386
UNIVERSAL SERIAL BUS INTERFACE
388
UNIVERSAL SERIAL BUS DEVICE
SYSTEM BUS
390

FIG. 8

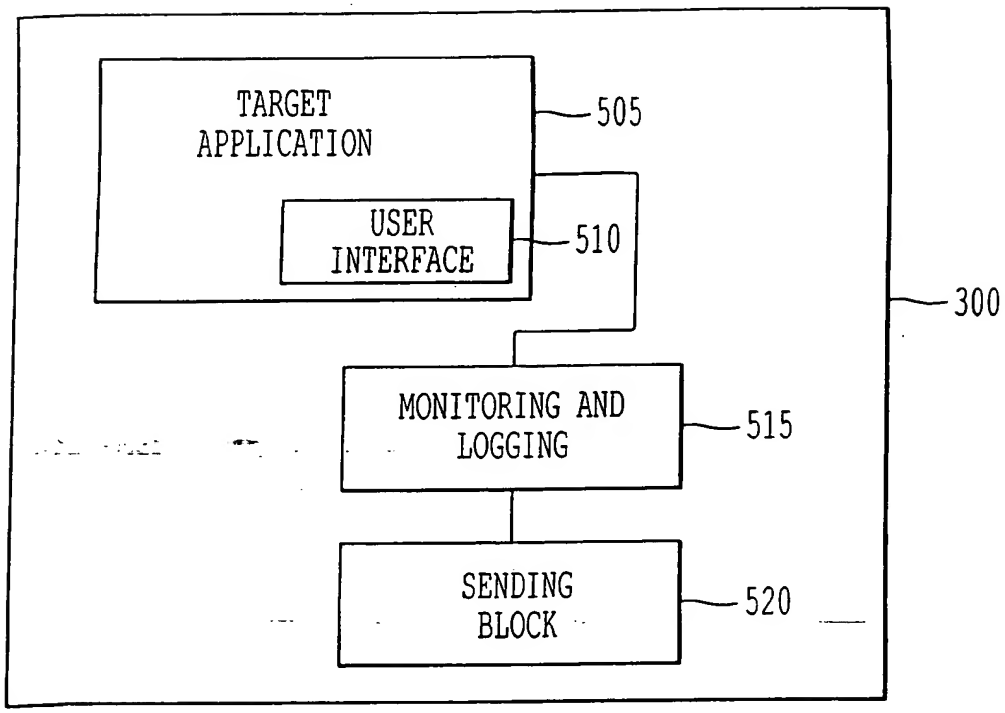

TARGET APPLICATION
505
USER INTERFACE
510
300
MONITORING AND LOGGING
515
SENDING BLOCK
520

FIG. 9

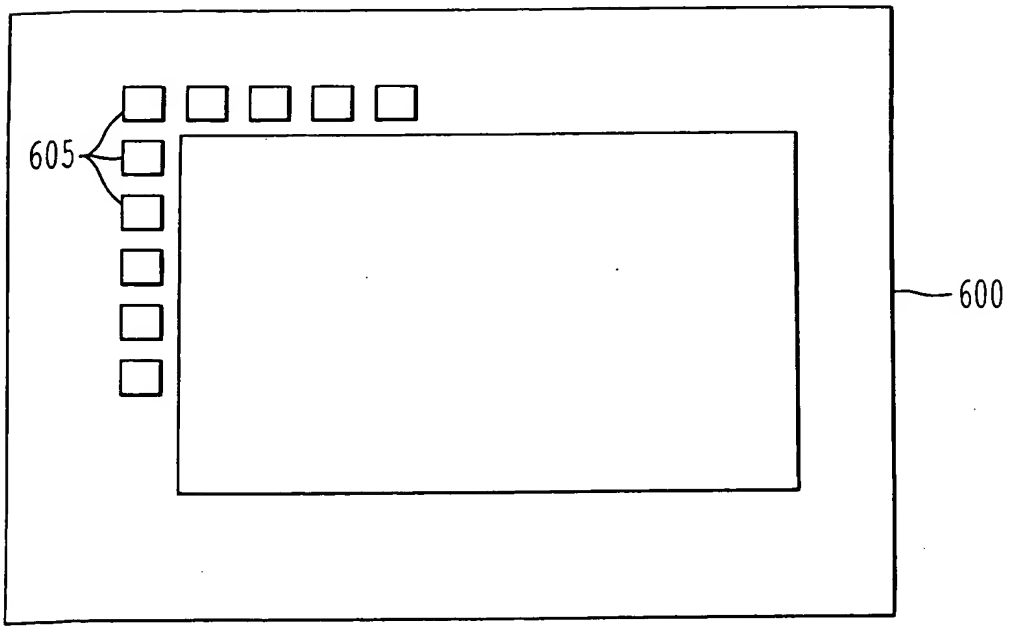

605
600

FIG. 10

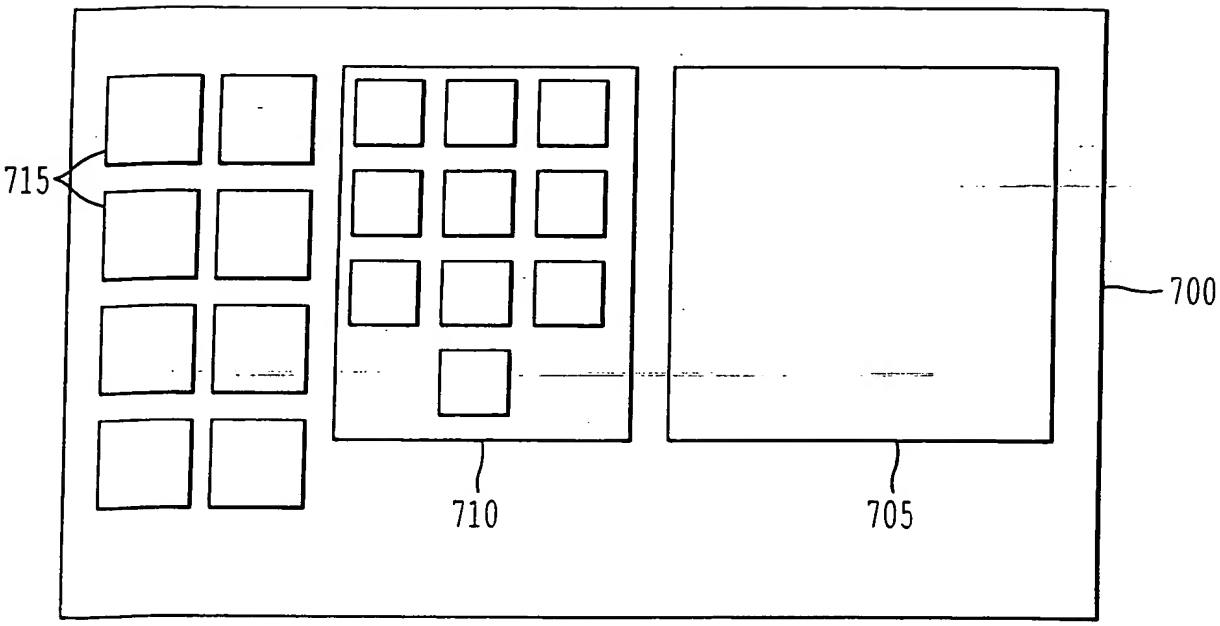


FIG. 11

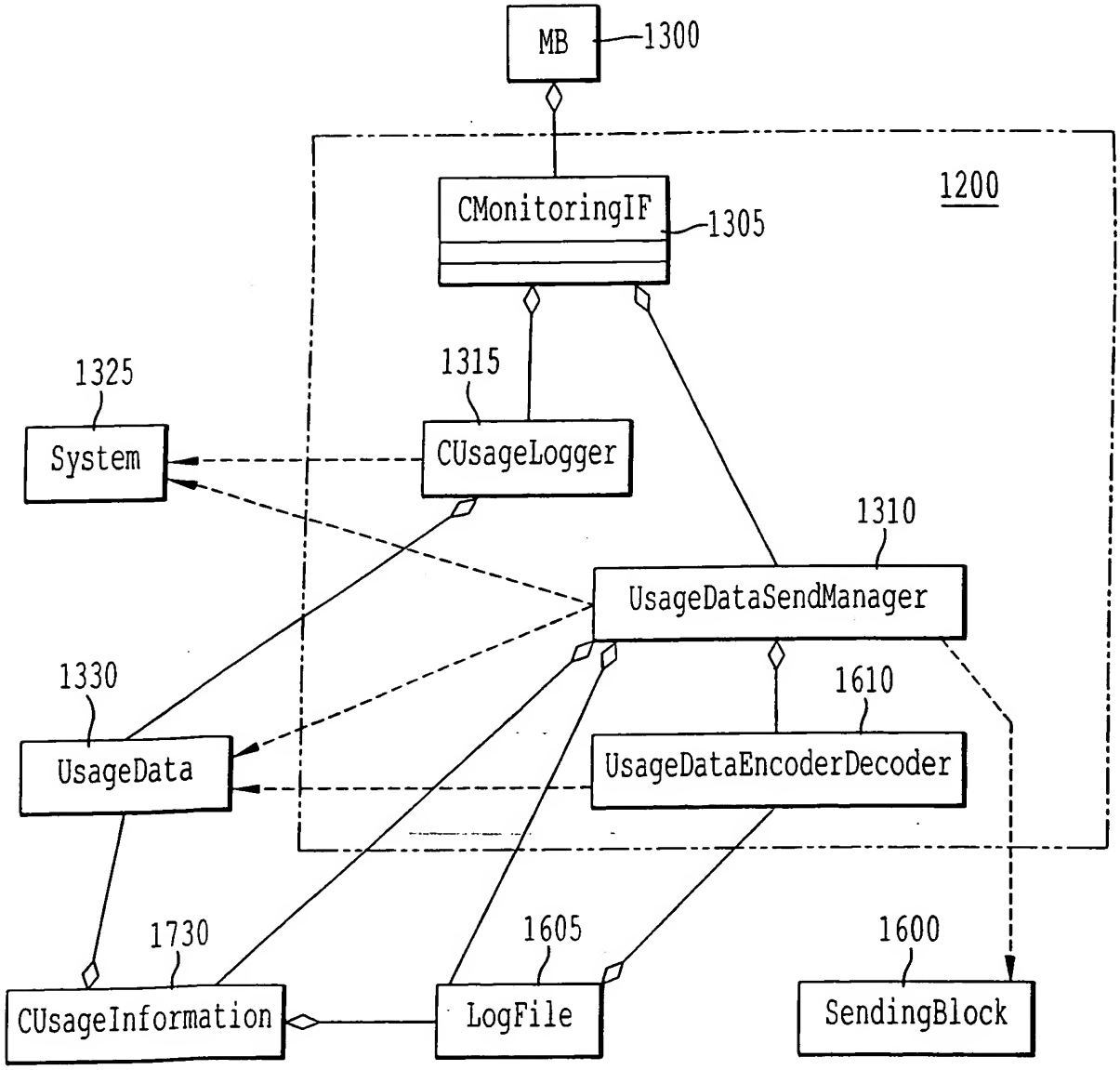


FIG. 12A

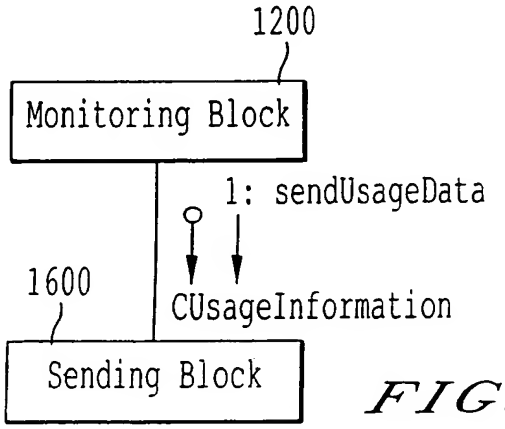


FIG. 12B

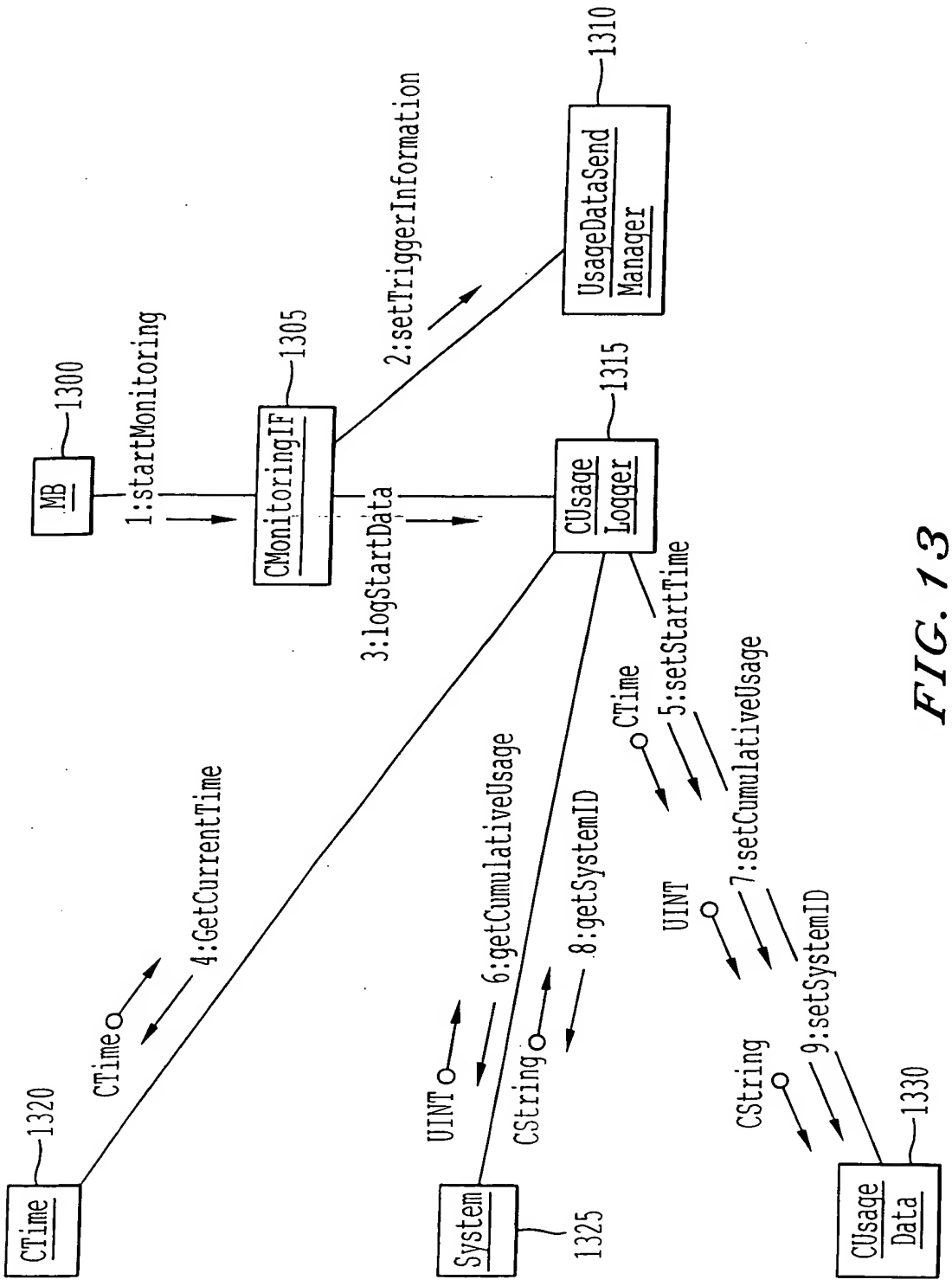

MB
1300
1:startMonitoring
CMonitoringIF
1305
2:setTriggerInformation
UsageDataSend Manager
1310
3:logStartData
CUsage Logger
1315
4:GetCurrentTime
CTime
1320
CTime
5:setStartTime
6:getCumulativeUsage
UINT
7:setCumulativeUsage
8:getSystemID
CString
9:setSystemID
System
1325
CUsage Data
1330

FIG. 13

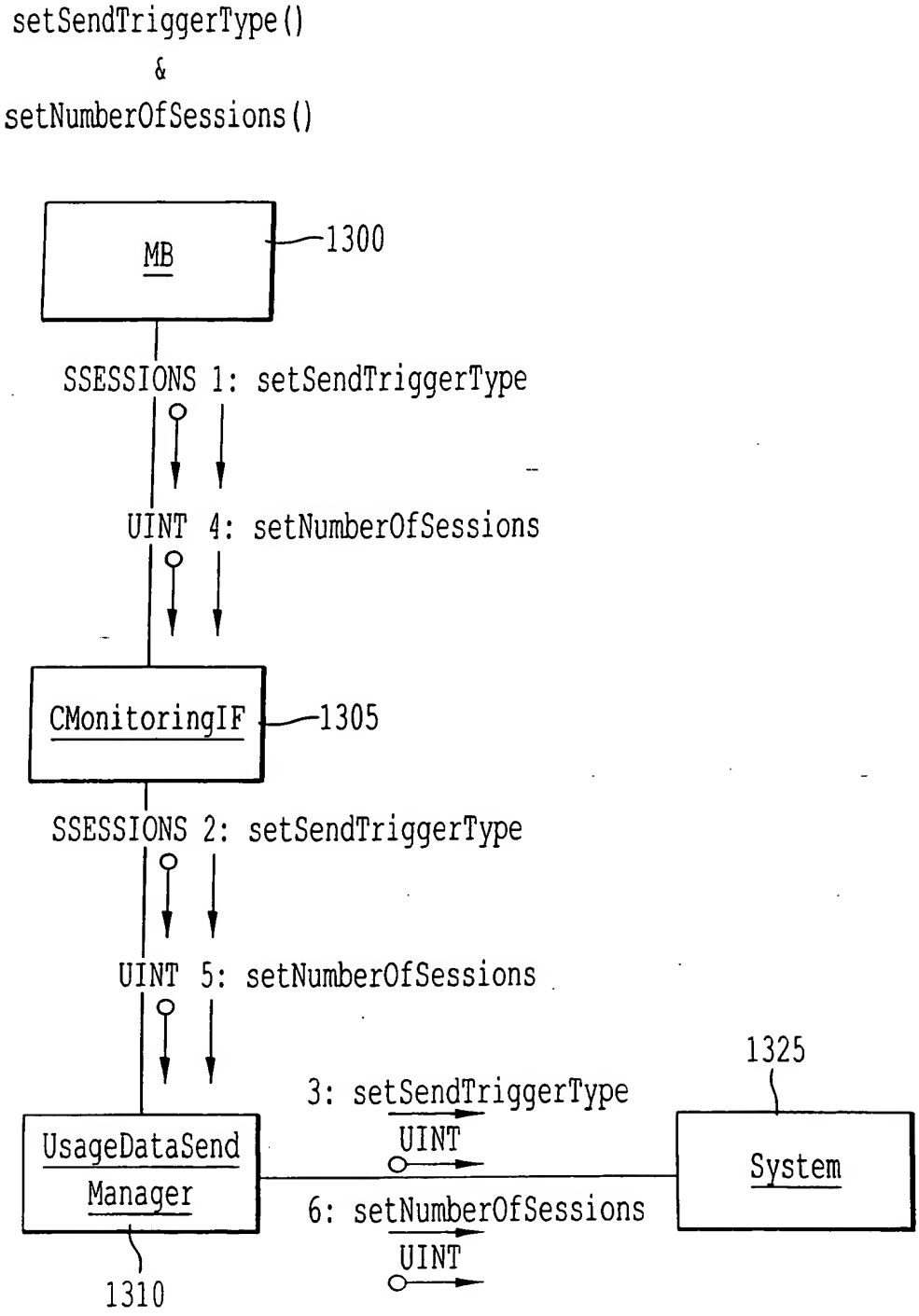

setSendTriggerType()
&
setNumberOfSessions()
MB
1300
SSESSIONS 1: setSendTriggerType
UINT 4: setNumberOfSessions
CMonitoringIF
1305
SSESSIONS 2: setSendTriggerType
UINT 5: setNumberOfSessions
1325
3: setSendTriggerType
UINT
UsageDataSend Manager
System
6: setNumberOfSessions
UINT
1310

FIG. 14

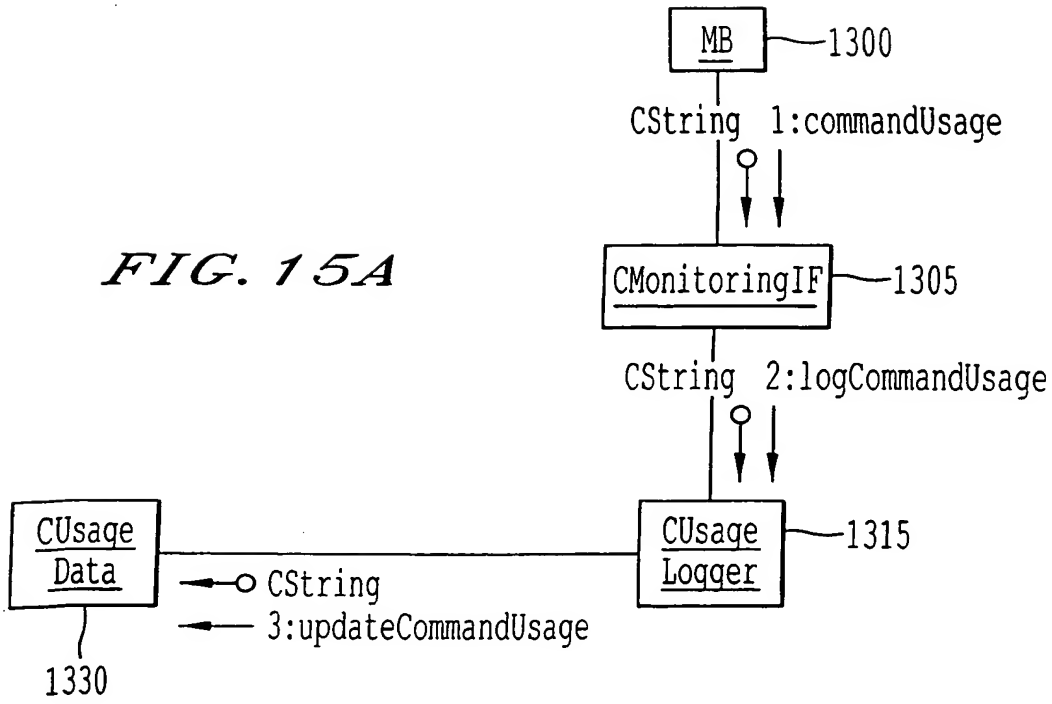


FIG. 15A

CommandUsage() Scenario

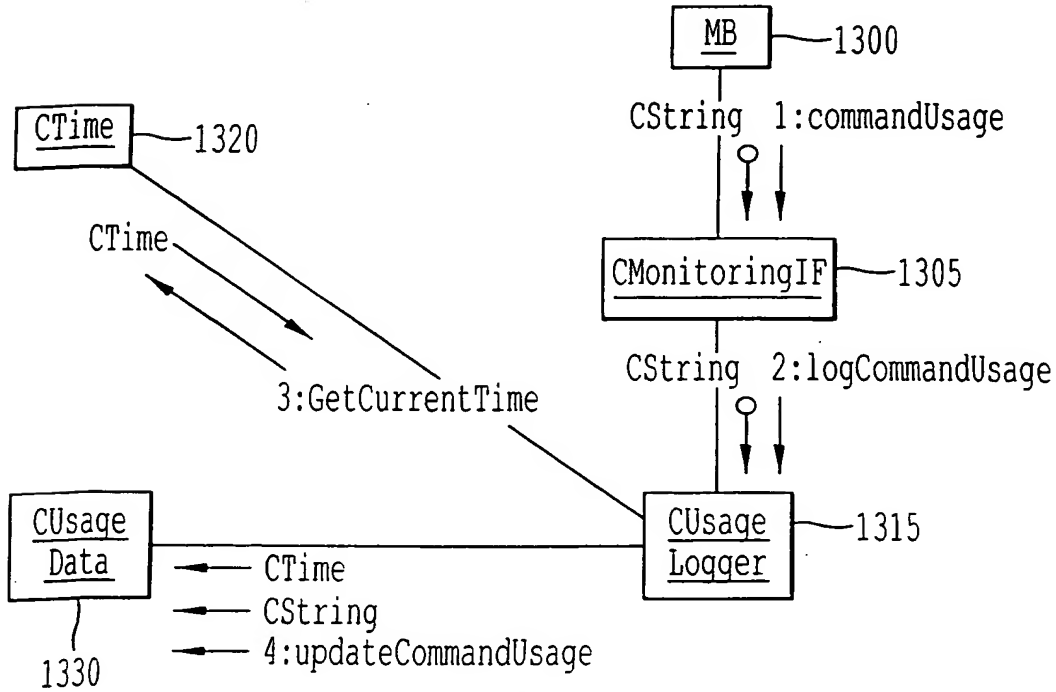


FIG. 15B

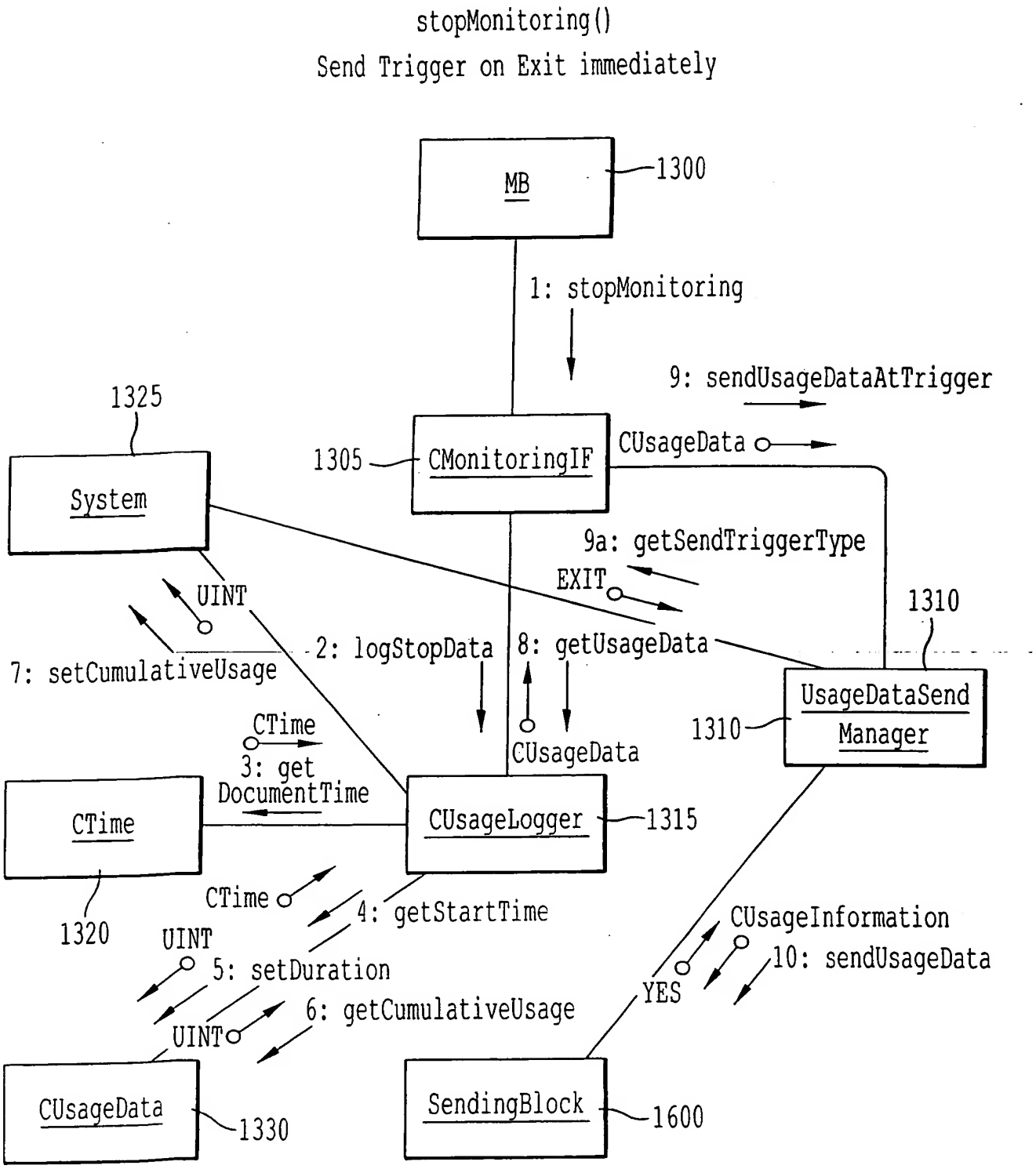

stopMonitoring()
Send Trigger on Exit immediately
MB
1300
1: stopMonitoring
9: sendUsageDataAtTrigger
1325
1305
CMonitoringIF
CUsageData
System
9a: getSendTriggerType
EXIT
UINT
1310
2: logStopData
8: getUsageData
7: setCumulativeUsage
UsageDataSend Manager
1310
CTime
3: get DocumentTime
CUsageData
CTime
CUsageLogger
1315
CTime
4: getStartTime
1320
UINT
CUsageInformation
5: setDuration
10: sendUsageData
YES
6: getCumulativeUsage
UINT
CUsageData
1330
SendingBlock
1600

FIG. 16A

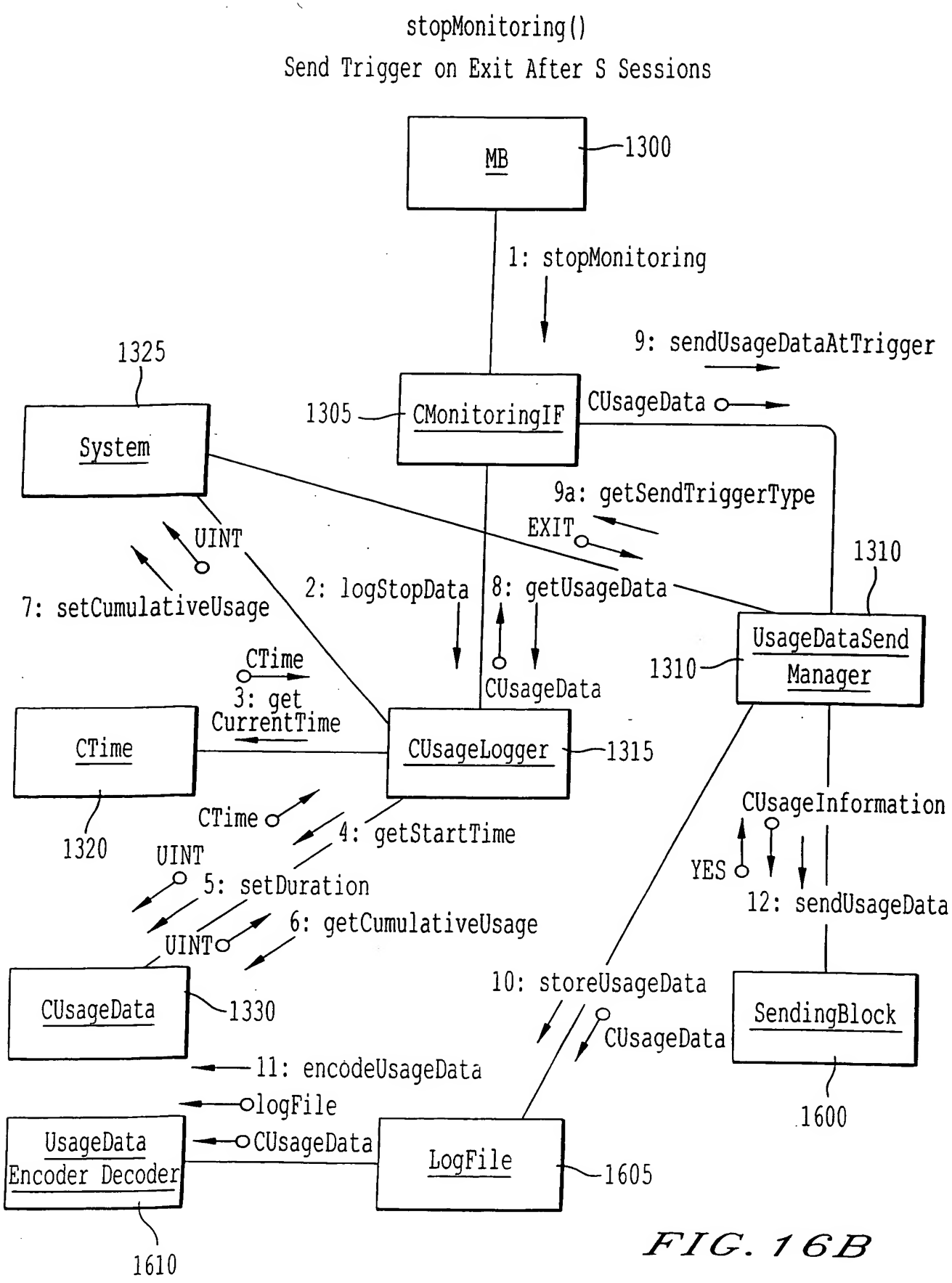

stopMonitoring()
Send Trigger on Exit After S Sessions
MB
1300
1: stopMonitoring
9: sendUsageDataAtTrigger
1325
1305
CMonitoringIF
CUsageData
System
9a: getSendTriggerType
EXIT
UINT
1310
7: setCumulativeUsage
2: logStopData
8: getUsageData
UsageDataSend Manager
CTime
3: get CurrentTime
CUsageData
CTime
CUsageLogger
1315
CUsageInformation
CTime
4: getStartTime
1320
UINT
YES
5: setDuration
12: sendUsageData
6: getCumulativeUsage
UINT
10: storeUsageData
CUsageData
SendingBlock
CUsageData
1330
11: encodeUsageData
logFile
1600
UsageData Encoder Decoder
CUsageData
LogFile
1605
1610

FIG. 16B

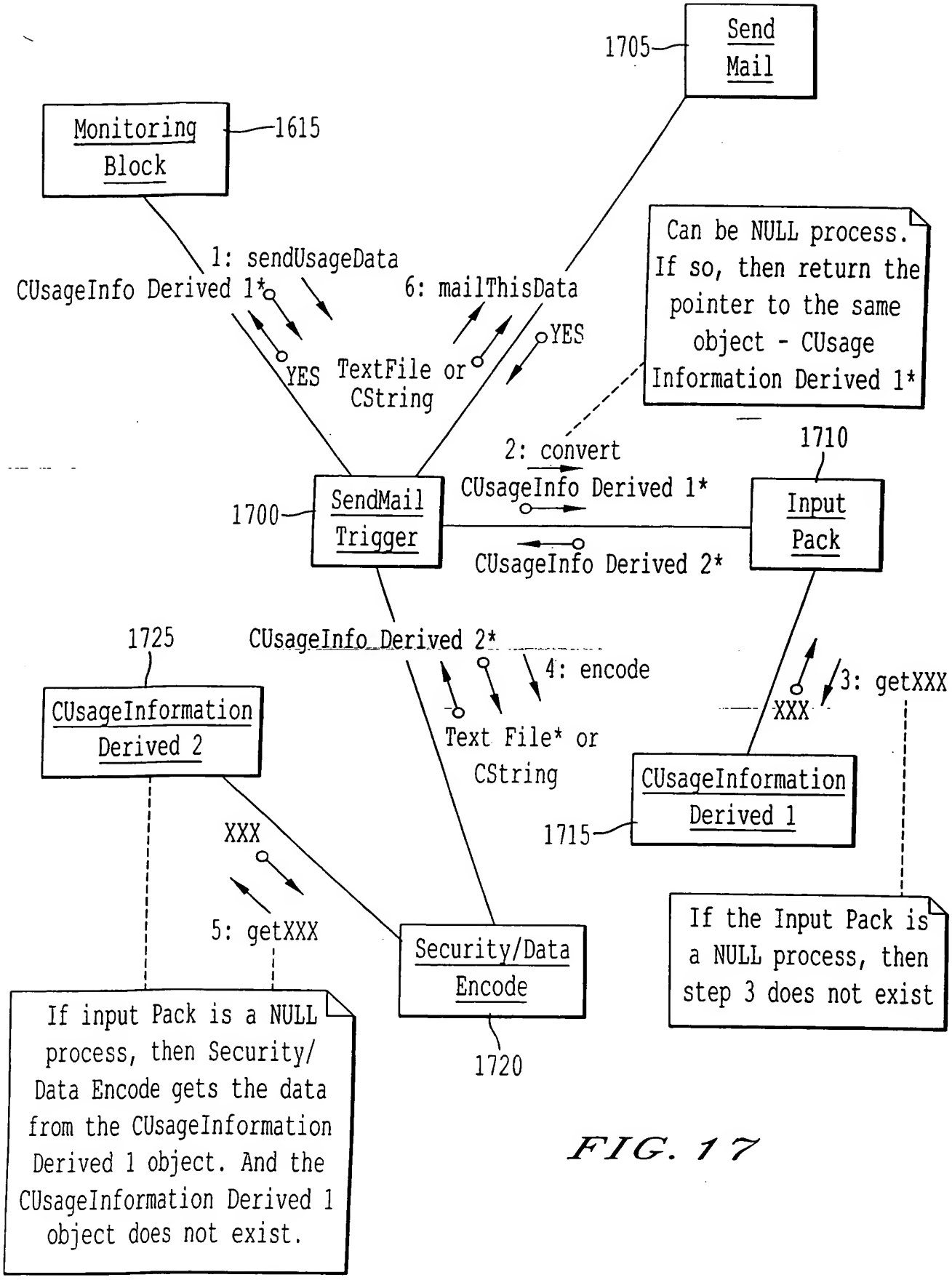

Send Mail
1705
Monitoring Block
1615
1: sendUsageData
CUsageInfo Derived 1*
YES
6: mailThisData
YES
TextFile or CString
Can be NULL process. If so, then return the pointer to the same object - CUsage Information Derived 1*
2: convert
CUsageInfo Derived 1*
CUsageInfo Derived 2*
1710
1700
SendMail Trigger
Input Pack
1725
CUsageInfo Derived 2*
4: encode
Text File* or CString
XXX
3: getXXX
CUsageInformation Derived 2
CUsageInformation Derived 1
1715
XXX
5: getXXX
Security/Data Encode
1720
If the Input Pack is a NULL process, then step 3 does not exist
If input Pack is a NULL process, then Security/ Data Encode gets the data from the CUsageInformation Derived 1 object. And the CUsageInformation Derived 1 object does not exist.

FIG. 17

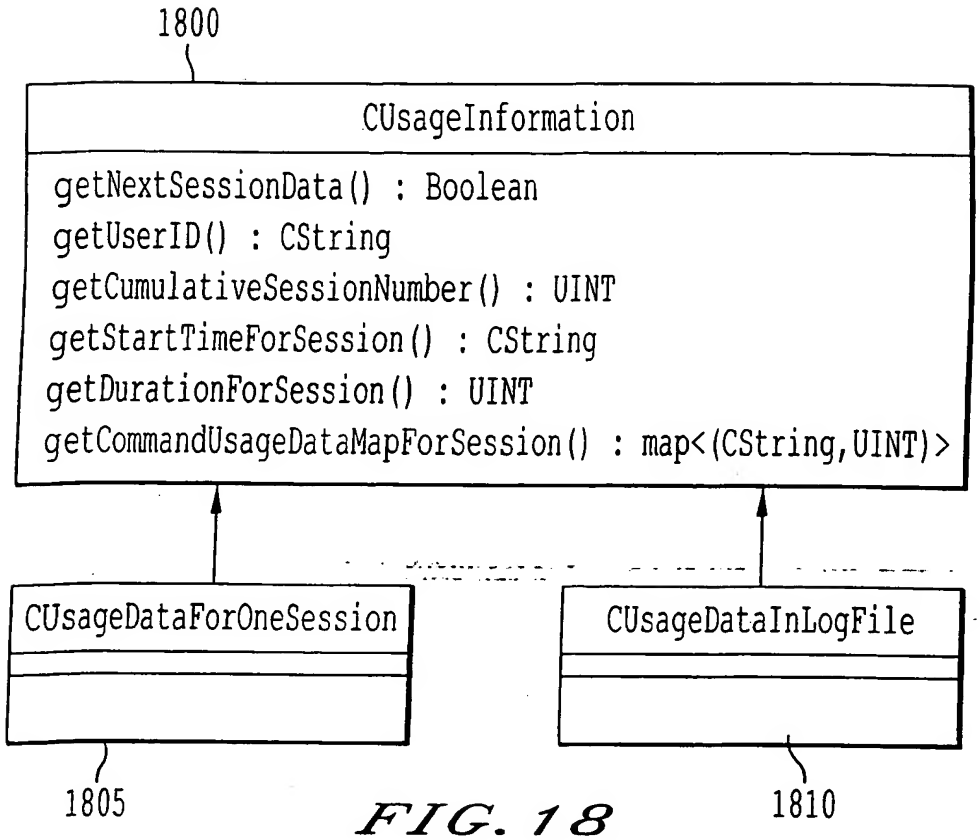

1800
CUsageInformation
getNextSessionData() : Boolean
getUserID() : CString
getCumulativeSessionNumber() : UINT
getStartTimeForSession() : CString
getDurationForSession() : UINT
getCommandUsageDataMapForSession() : map<(CString,UINT)>
CUsageDataForOneSession
CUsageDataInLogFile
1805
1810

FIG. 18

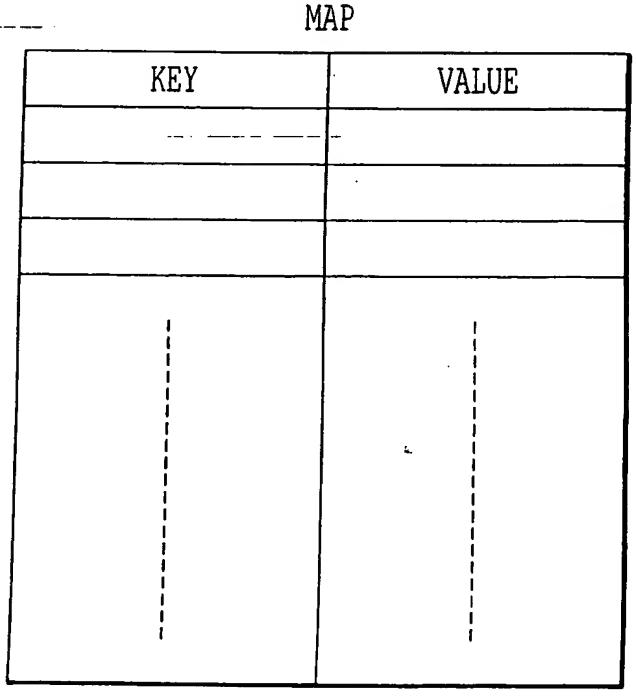
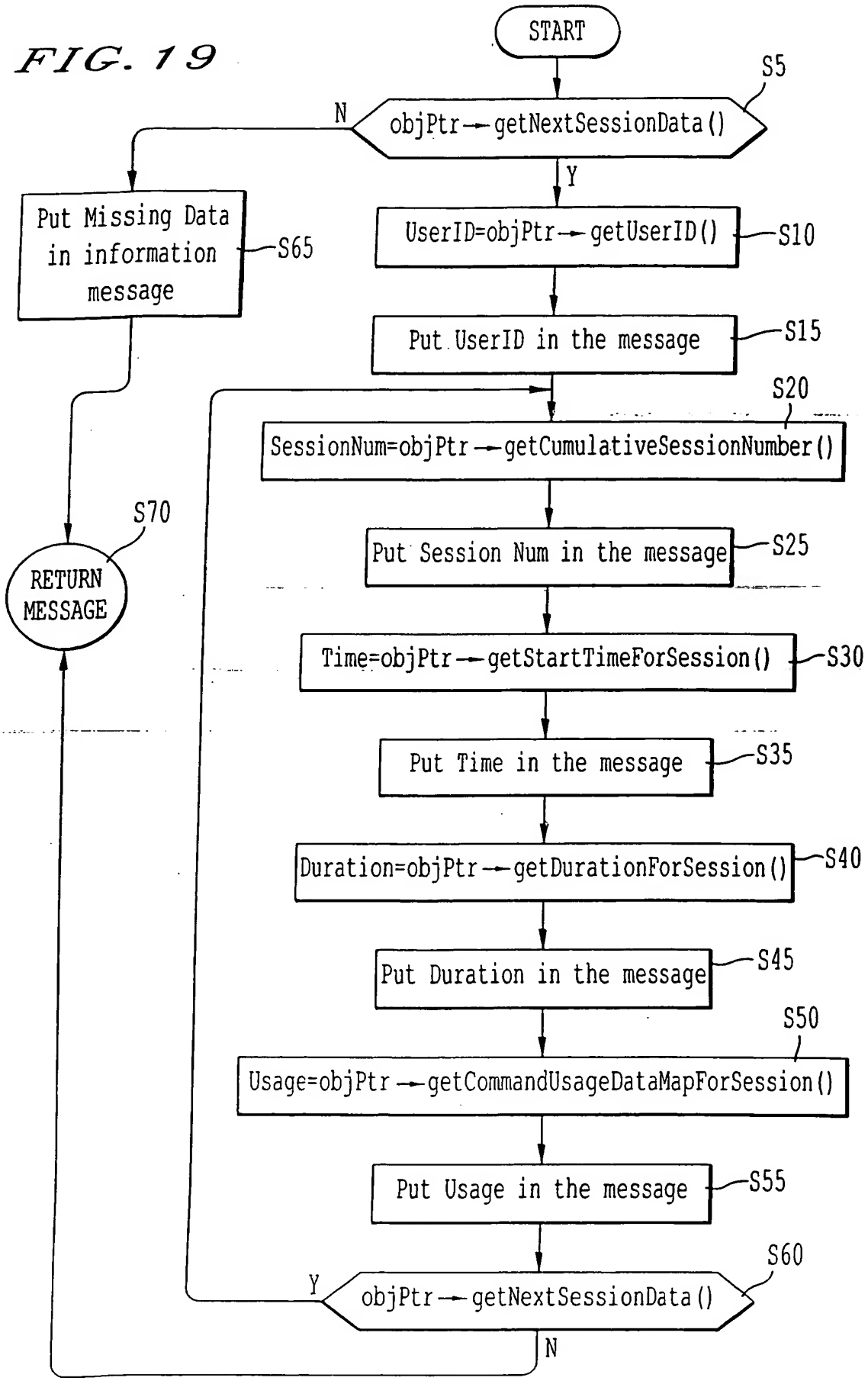

MAP
KEY
VALUE

FIG. 20

FIG. 19


START
S5
objPtr→getNextSessionData()
N
Y
Put Missing Data in information message
S65
UserID=objPtr→getUserID()
S10
Put UserID in the message
S15
S20
SessionNum=objPtr→getCumulativeSessionNumber()
S70
RETURN MESSAGE
Put Session Num in the message
S25
Time=objPtr→getStartTimeForSession()
S30
Put Time in the message
S35
Duration=objPtr→getDurationForSession()
S40
Put Duration in the message
S45
S50
Usage=objPtr→getCommandUsageDataMapForSession()
Put Usage in the message
S55
S60
Y
objPtr→getNextSessionData()
N

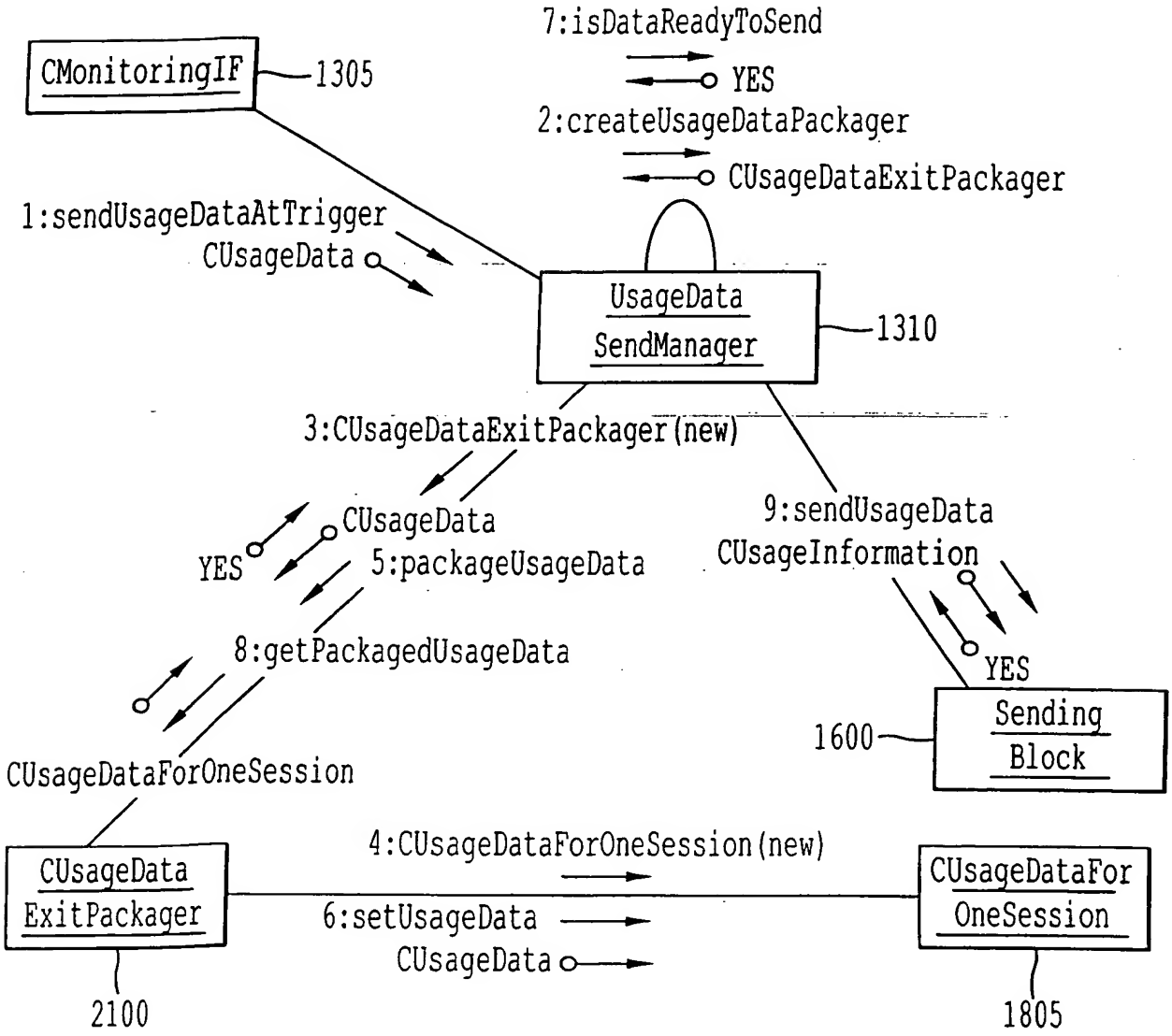

CMonitoringIF
1305
7:isDataReadyToSend
YES
2:createUsageDataPackager
CUsageDataExitPackager
1:sendUsageDataAtTrigger
CUsageData
UsageData
SendManager
1310
3:CUsageDataExitPackager(new)
CUsageData
YES
5:packageUsageData
8:getPackagedUsageData
CUsageDataForOneSession
9:sendUsageData
CUsageInformation
YES
1600
Sending
Block
CUsageData
ExitPackager
4:CUsageDataForOneSession(new)
6:setUsageData
CUsageData
CUsageDataFor
OneSession
2100
1805

FIG. 21

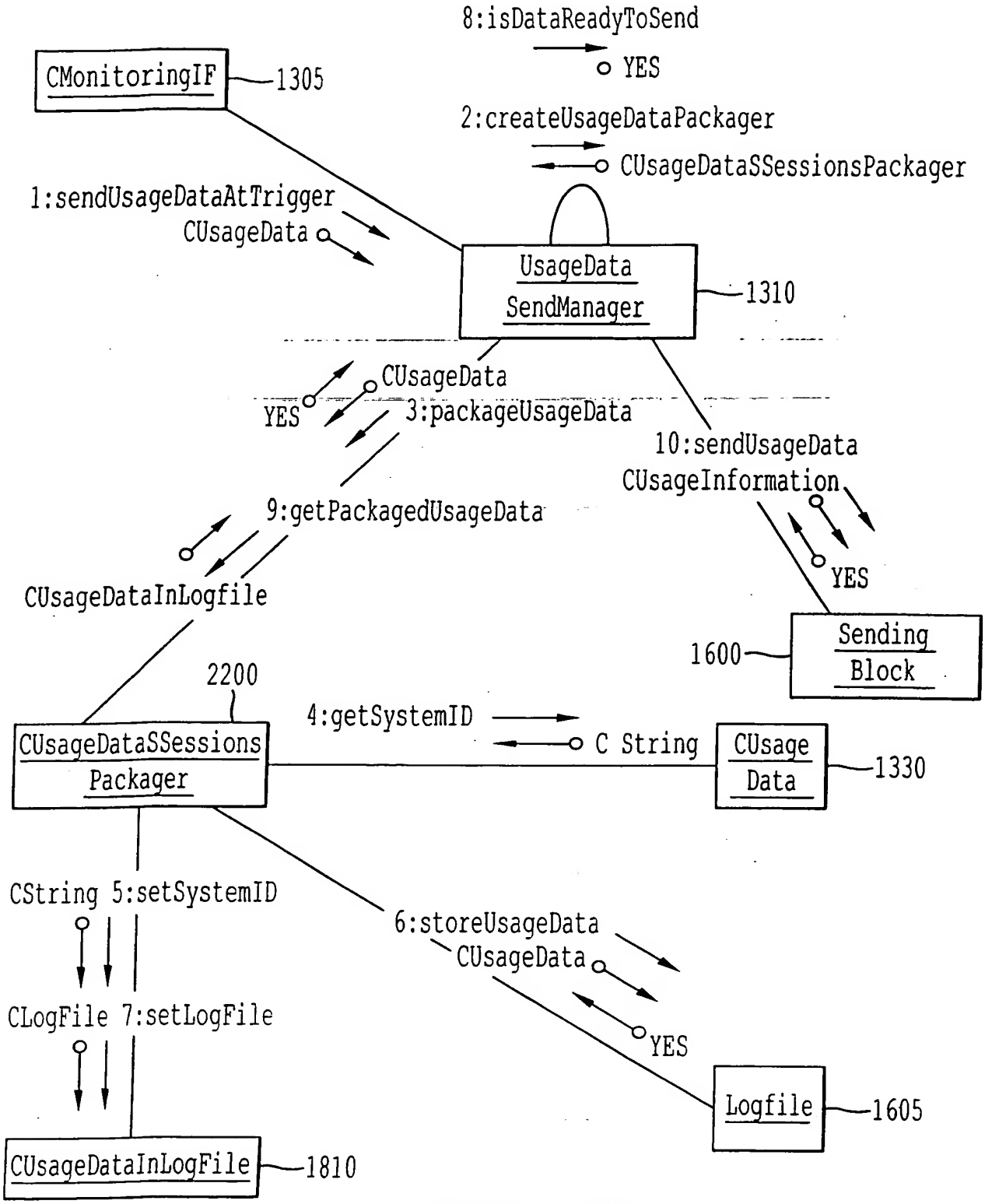

8:isDataReadyToSend
YES
CMonitoringIF
1305
2:createUsageDataPackager
CUsageDataSSessionsPackager
1:sendUsageDataAtTrigger
CUsageData
UsageData
SendManager
1310
CUsageData
YES
3:packageUsageData
10:sendUsageData
CUsageInformation
9:getPackagedUsageData
YES
CUsageDataInLogfile
1600
Sending
Block
2200
4:getSystemID
C String
CUsageDataSSessions
Packager
CUsage
Data
1330
CString 5:setSystemID
6:storeUsageData
CUsageData
YES
CLogFile 7:setLogFile
Logfile
1605
CUsageDataInLogFile
1810

FIG. 22

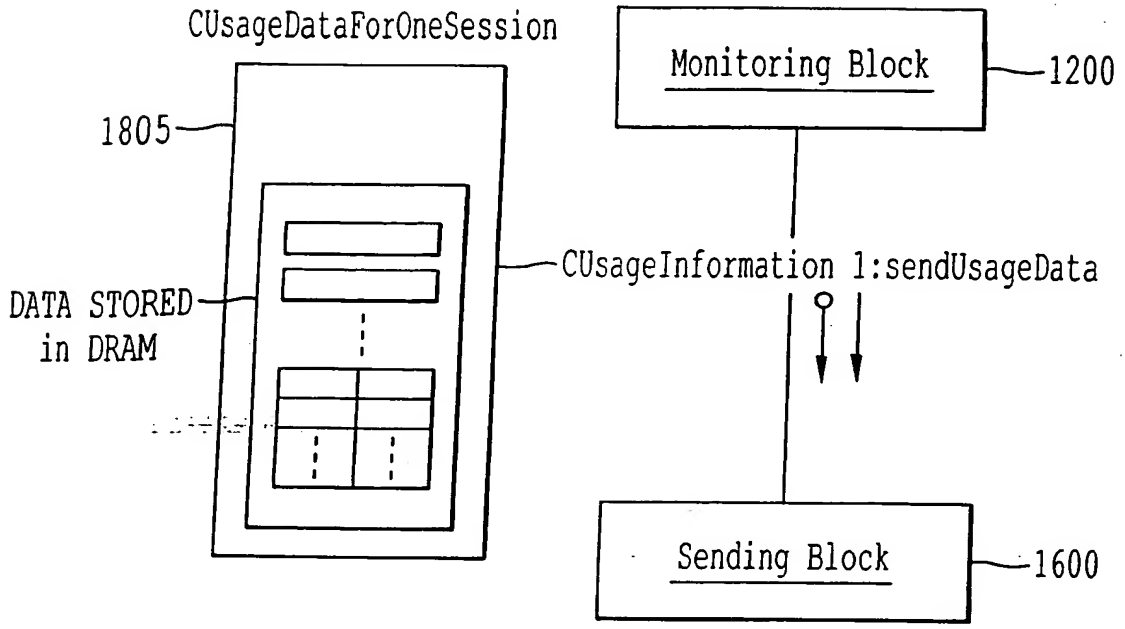


FIG. 23A

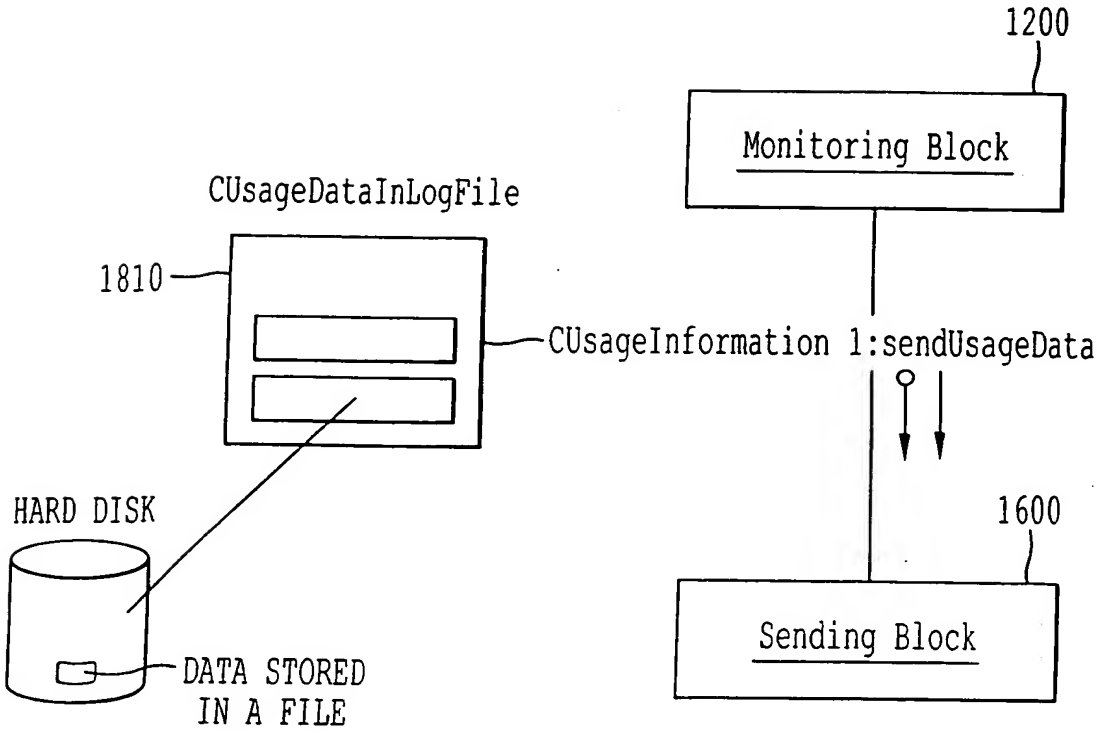


FIG. 23B

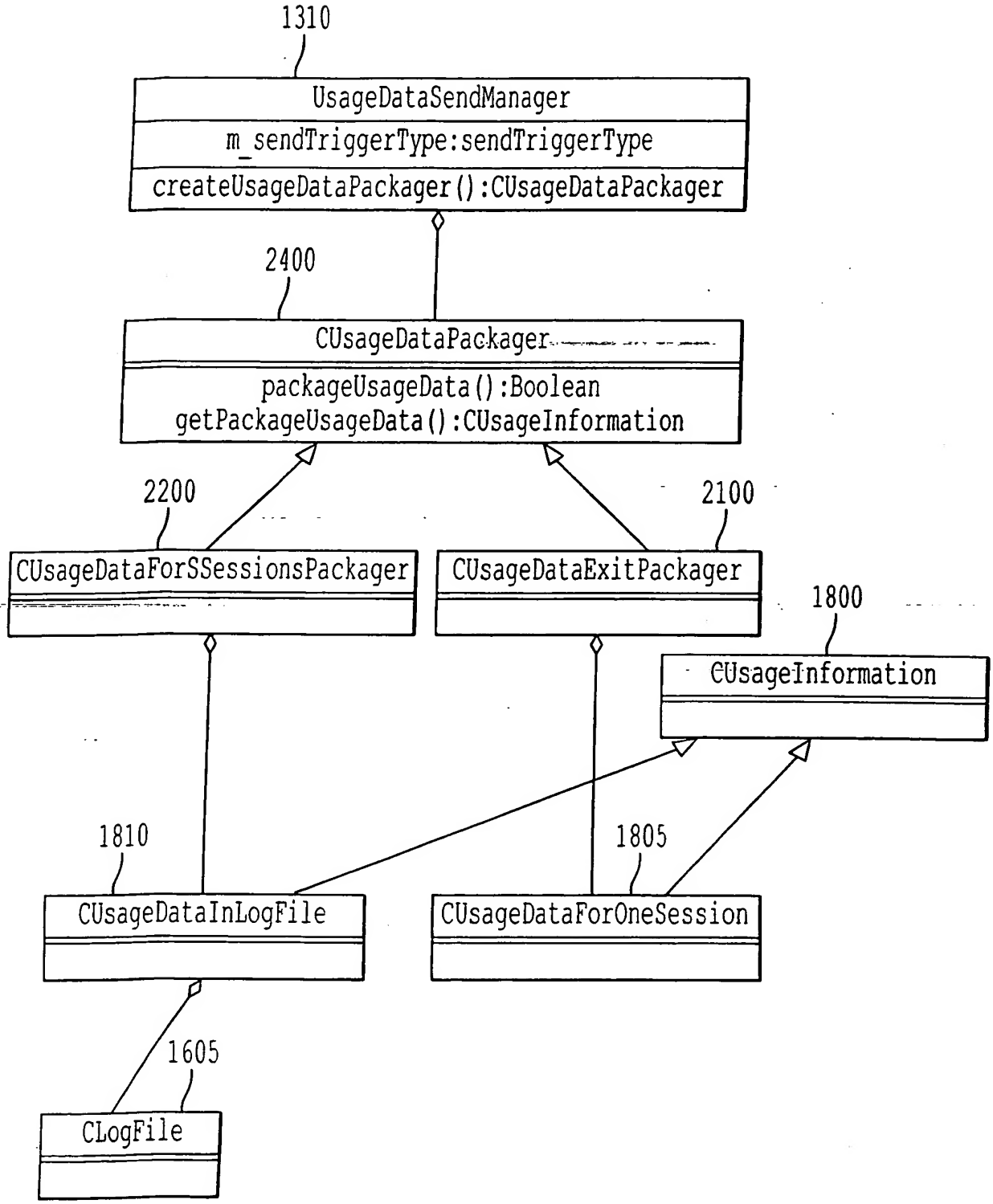
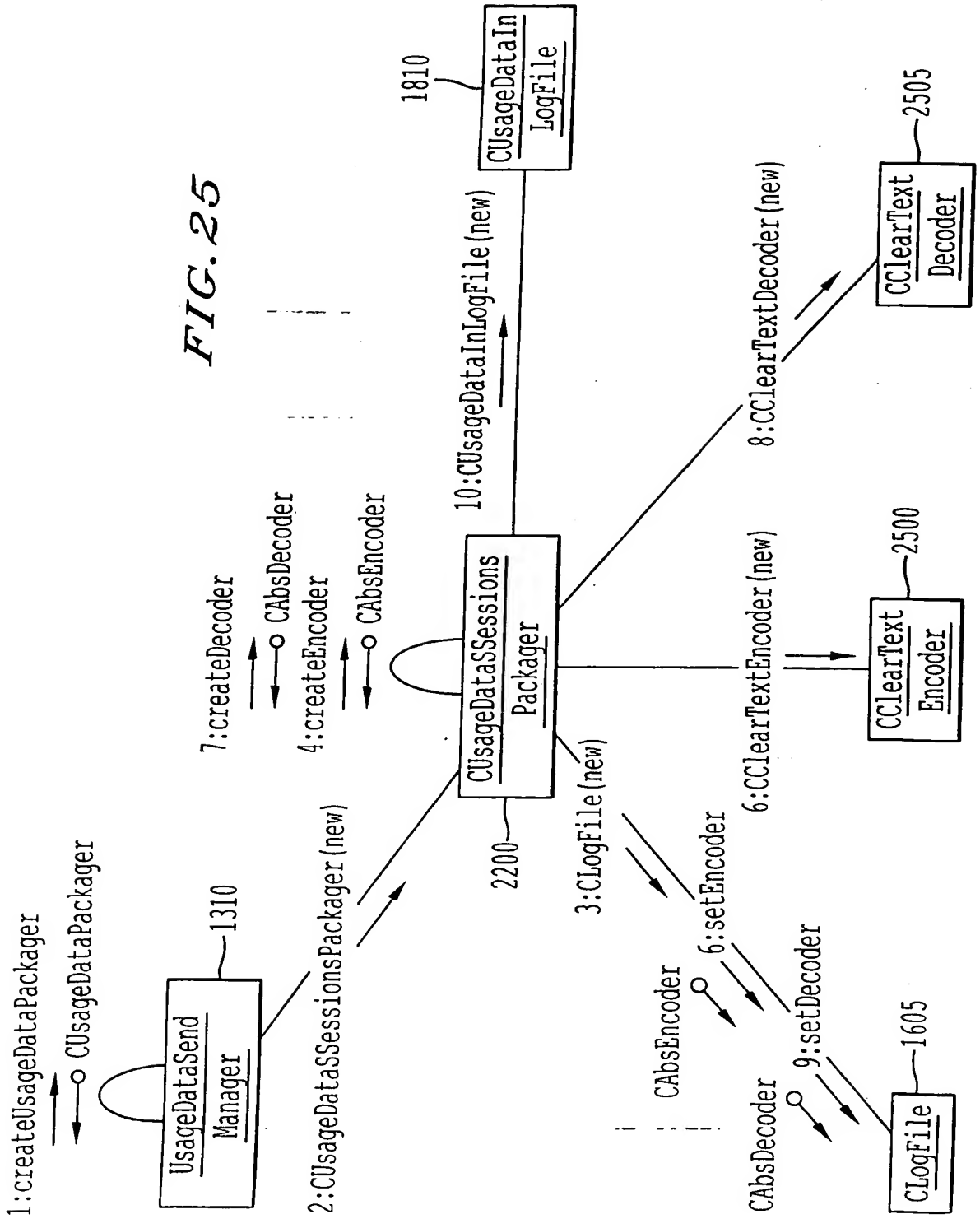

1310
UsageDataSendManager
m_sendTriggerType:sendTriggerType
createUsageDataPackager():CUsageDataPackager
2400
CUsageDataPackager
packageUsageData():Boolean
getPackageUsageData():CUsageInformation
2200
2100
CUsageDataForSSessionsPackager
CUsageDataExitPackager
1800
CUsageInformation
1810
1805
CUsageDataInLogFile
CUsageDataForOneSession
1605
CLogFile

FIG. 24

FIG. 25


1:createUsageDataPackager
CUsageDataPackager
UsageDataSend Manager
1310
2:CUsageDataSessionsPackager(new)
7:createDecoder
CAbsDecoder
4:createEncoder
CAbsEncoder
CUsageDataSessions Packager
2200
10:CUsageDataInLogFile(new)
1810
CUsageDataIn LogFile
3:CLogFile(new)
CAbsEncoder
6:setEncoder
CAbsDecoder
9:setDecoder
CLogFile
1605
6:CClearTextEncoder(new)
CClearText Encoder
2500
8:CClearTextDecoder(new)
CClearText Decoder
2505

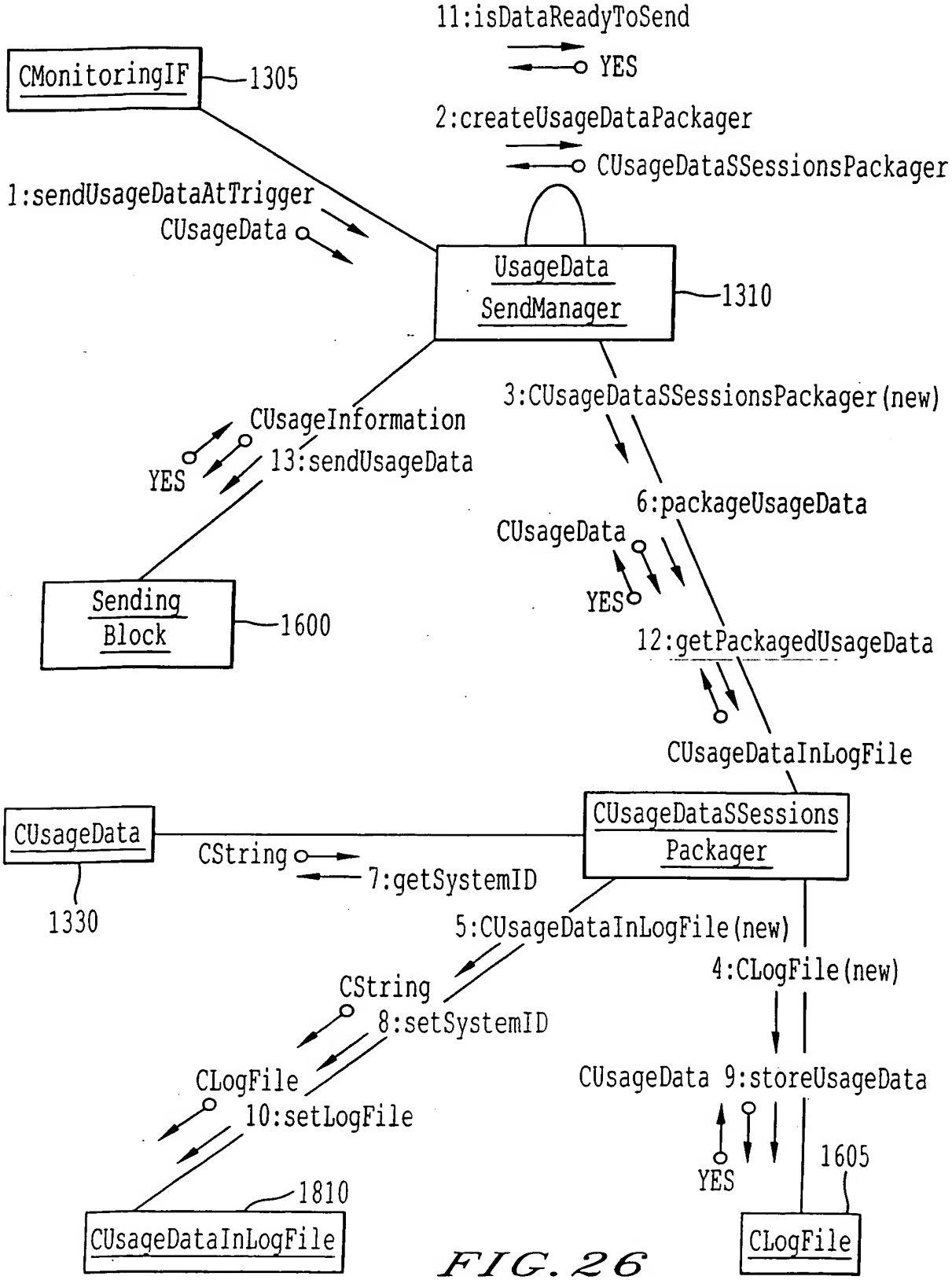

11:isDataReadyToSend
YES
CMonitoringIF
1305
2:createUsageDataPackager
CUsageDataSSessionsPackager
1:sendUsageDataAtTrigger
CUsageData
UsageData
SendManager
1310
3:CUsageDataSSessionsPackager(new)
CUsageInformation
YES
13:sendUsageData
6:packageUsageData
CUsageData
YES
Sending
Block
1600
12:getPackagedUsageData
CUsageDataInLogFile
CUsageData
CUsageDataSSessions
Packager
CString
7:getSystemID
1330
5:CUsageDataInLogFile(new)
4:CLogFile(new)
CString
8:setSystemID
CLogFile
CUsageData 9:storeUsageData
10:setLogFile
YES
1605
1810
CUsageDataInLogFile
CLogFile

FIG. 26

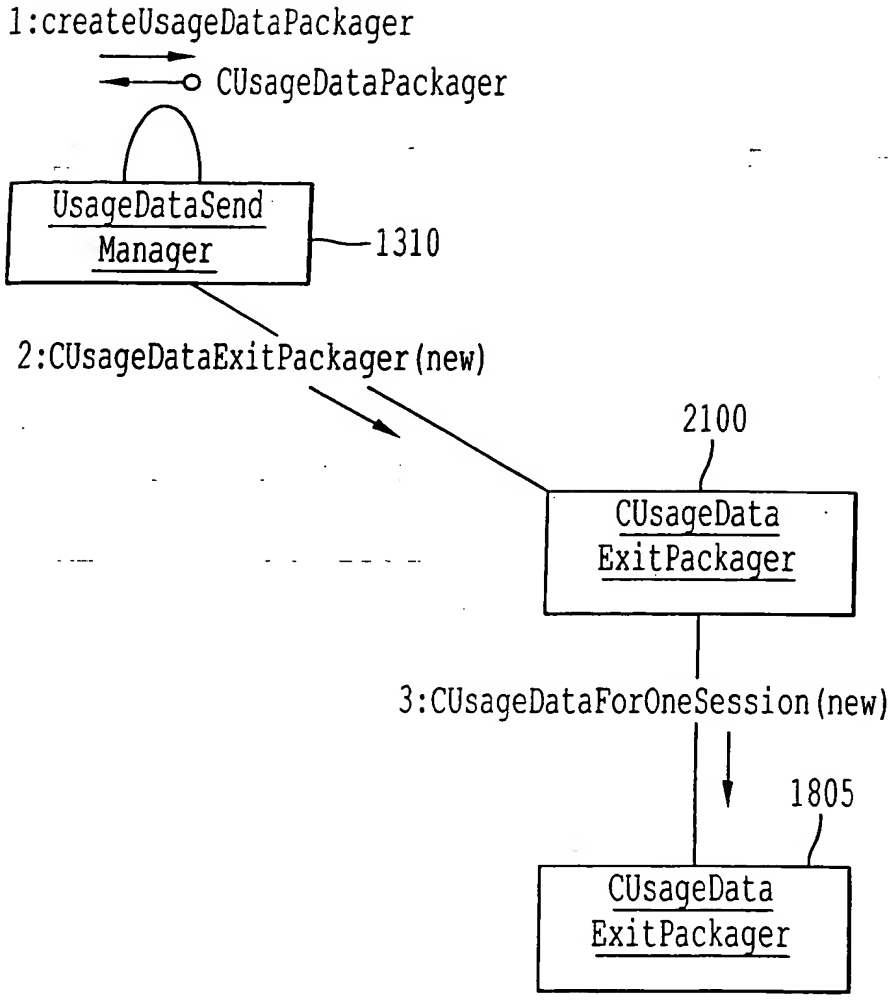

1:createUsageDataPackager
CUsageDataPackager
UsageDataSend Manager
1310
2:CUsageDataExitPackager(new)
2100
CUsageData ExitPackager
3:CUsageDataForOneSession(new)
1805
CUsageData ExitPackager

FIG. 27

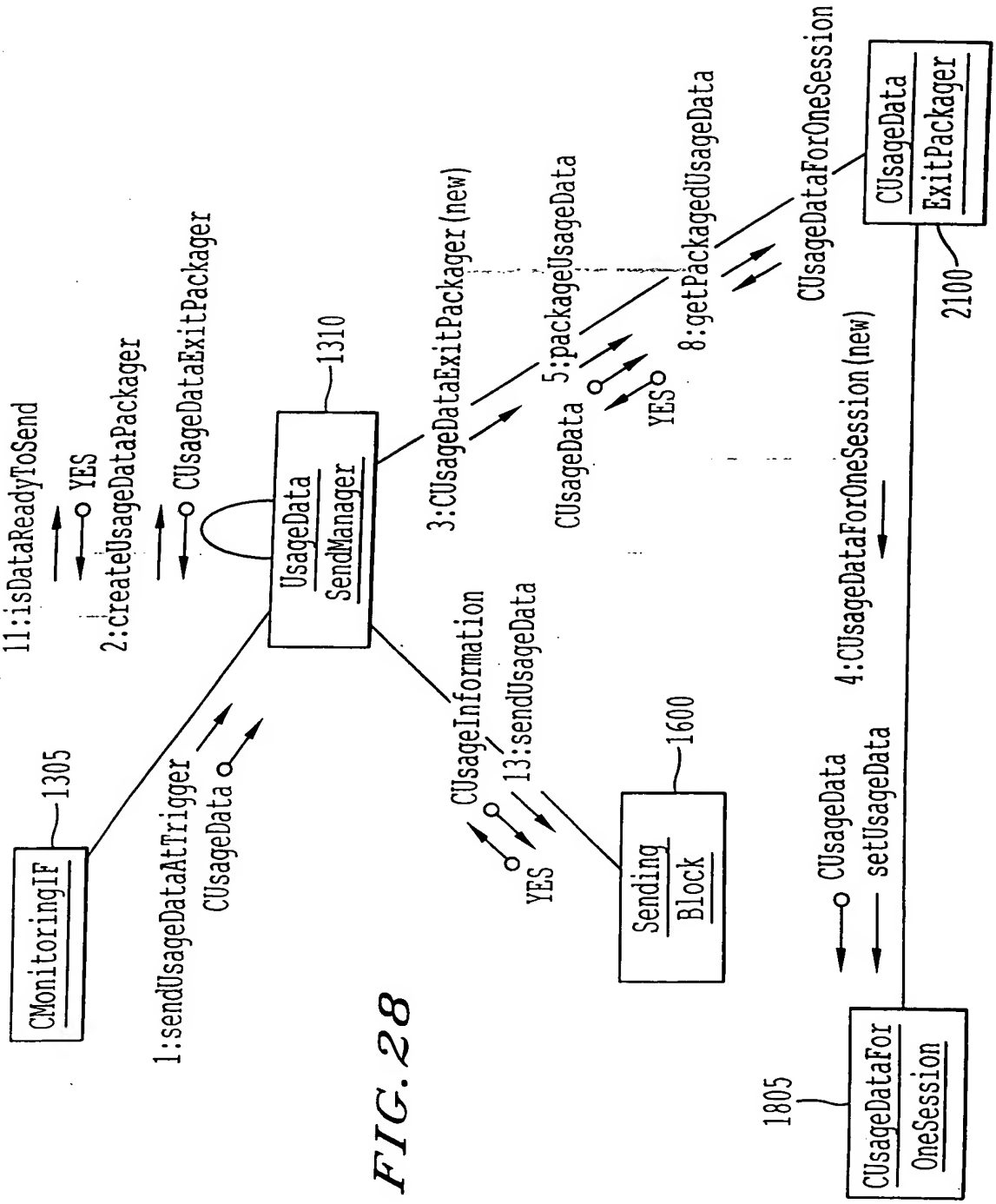

CMonitoringIF
1305
UsageData SendManager
1310
Sending Block
1600
CUsageDataFor OneSession
1805
CUsageData ExitPackager
2100
11:isDataReadyToSend
YES
2:createUsageDataPackager
CUsageDataExitPackager
1:sendUsageDataAtTrigger
CUsageData
3:CUsageDataExitPackager(new)
5:packageUsageData
CUsageData
YES
8:getPackagedUsageData
CUsageDataForOneSession
4:CUsageDataForOneSession(new)
CUsageInformation
13:sendUsageData
YES
CUsageData
setUsageData

FIG. 28

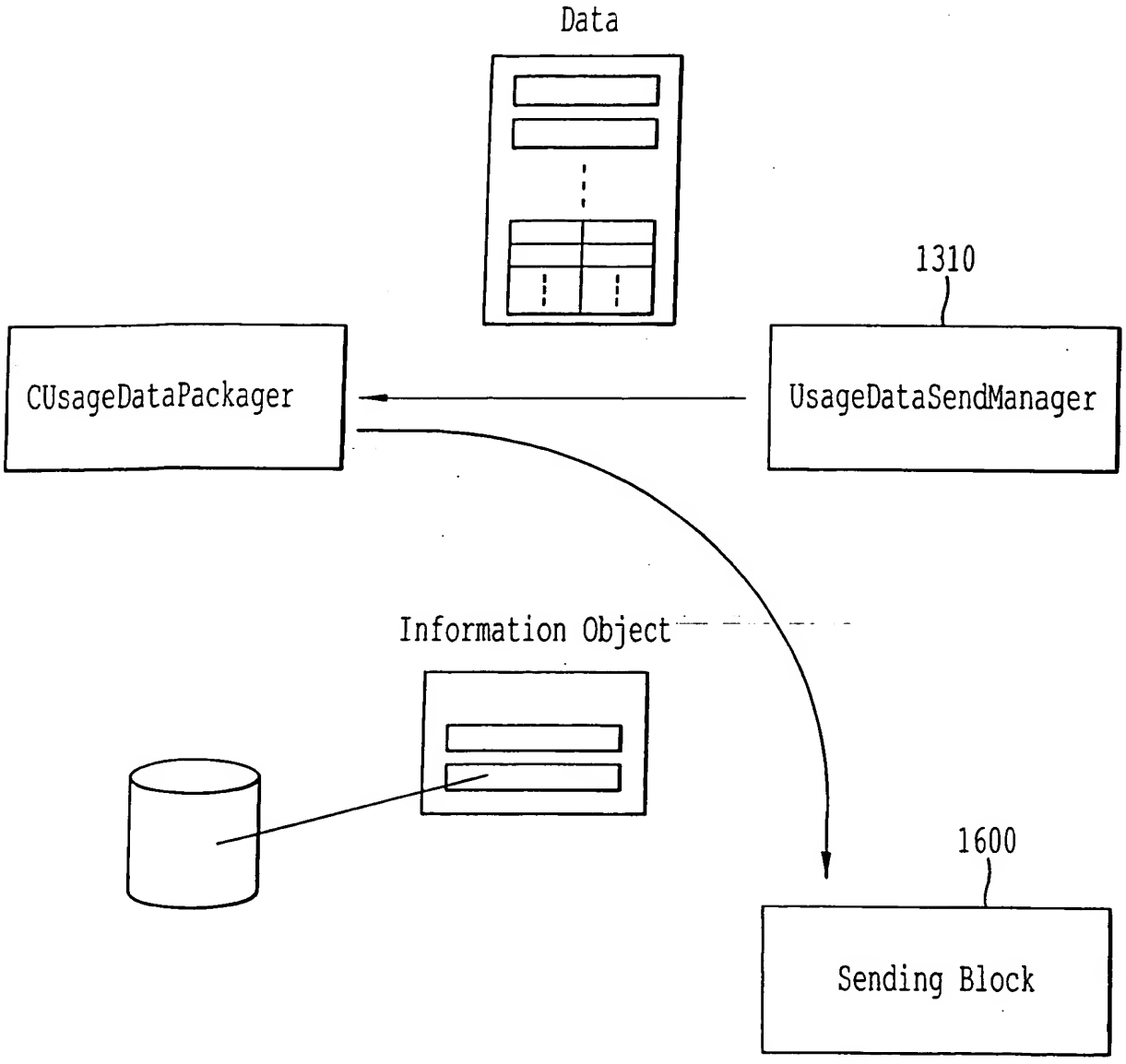

Data
1310
CUsageDataPackager
UsageDataSendManager
Information Object
1600
Sending Block

FIG. 29A

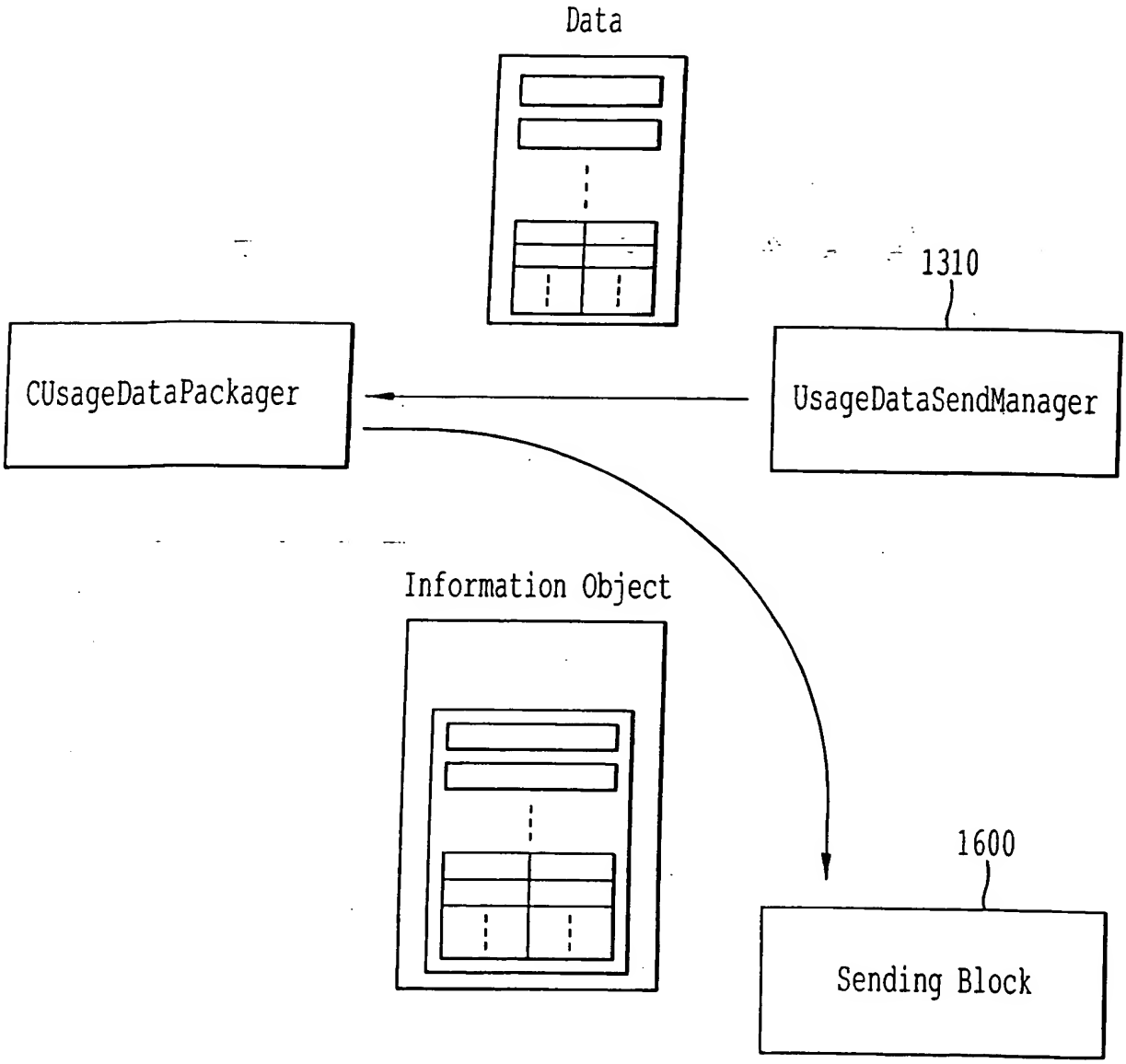

Data
1310
CUsageDataPackager
UsageDataSendManager
Information Object
1600
Sending Block

FIG. 29B